ANTHROPOLOGIE

ABSTRACTED:

OR THE

Idea of Humane Nature

Reflected in briefe

Philosophicall, and Anatomicall

COLLECTIONS.

Ὦ πηγὴ σοφίας! ὦ τεῦχος ἀριπρεπές! ὄντως
Ἥν ἄρα τοῦτο σοφὸν, ΓΝΩΘΙ ΣΕΑΥΤΟΝ ἔπος!

Isaac. Casaubon. in Elogio suo Audr. Laurentij Anatom.

LONDON, August 30

Printed for *Henry Herringman*, at the Anchor in the lower walke in the New Exchange. 1655.

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ABSTRACTED:

OR THE

Idea of Human Nature

Reflected in Briefs

Philosophical

COLLECTIONS

MUSEUM

LONDON:

Printed for Mary [illegible] at the
Anchor in the Lower Walk in the New
Exchange. 1657.

THE STATIONER TO THE READER, &c.

WOuld Custom have dispensed, I well might have presented this discourse to the World, without the Formality of an Epistle: it being in it self so rich and absolute, as to deserve a candid and gratefull acceptance at the hands of all judicious persons. But, since use hath made it a Law, that the Readers Appetite must be excited by some Prologue, conteining either some Commendations of the Author, *or a*

Summary account of the Arguments *treated of by him: it concerns me to advertise you, (though briefly and plainly) of some things, the Knowledge whereof cannot but, in some measure, conduce both to your more easie Understanding of the* Design *of this* Orphan piece; *and the Justification of my* Care *and* Cost, *bestowed upon the publishing of it.*

As for the Author, therefore, be pleased to know, that He was a Person so Eminent both for Wit and Learning, that the University wherein He was educated, and at length deservedly honoured with the Degree *of* Doctor *in Physick, esteemed him as one of the most hopefull of his Profession, and one of the choicest Plants*

in all her Seminary; and when the hasty hand of Fate had crop: him in the Budd, lamented his immature Death, with Generall sorrow, so that his Funerall Orator (as I have been lately told) was allowed to have spoke in the genuine sense of his Auditory, when he said: Our losse is greater than to be felt at once, 'tis Time, and the want of such another to succeed into his room, that onely can teach us the just proportion of our misery, and his Worth.

As for the Book it self; though both the Subject Matter, and Language are far above the sphere of my mean judgement: yet I may adventure (and safely too, I presume) to tell you from some others, even of the highest

Form

Form of Scholars, that it contains the Rudiments of that most excellent Knowledge, the Knowledge of our selves; and those too not onely disposed into the most advantageous Method, as well for information, as Memory, but also clad in such proper and select Phrases, as soften the hardnesse of the Notions, and in every period, refresh the Attention with variety of elegant Expressions. So that it is a question (and long may continue so) whether Philosophy, *or* Rhetorick *can claim the greatest share in this* Treatise.

Whether the Author *ever intended to Communicate it to the* Publique, *I could by no meanes learn: but the Exactnesse of the work may, in some sort, warrant*

my

my Conjecture, that he wrote it not onely for his own use: it being not usuall, for Learned men to bestow so much sweat and oyle upon polishing and adorning their private Collections and Memorialls, as was necessary to make this so accurate. However, my good Fortune hath, after more than a dozen years since the Authors decease, brought it into my hands; and I doubt not but the benefit you shall receive by the perusing thereof, will fully convince you, that the Consideration of somewhat beside my own Gain, prevailed upon me to put the same into yours. In the confidence whereof, it becomes me to refer you to the Book it self.

H. Herringman.

To the Reader.

BRITISH MUSEUM

OF THE NATURE OF THE *HVMAN SOVL.*

CHAP. I.

ANTHROPOLOGIE, or the Hiſtory of Human Nature, is, in the Vulgar (yet juſt) impreſſion, diſtinguiſhed into two Volumes; The firſt entituled *Pſychologie*, the nature of the Rationall Soule diſcourſed: the other *Anatomie*, the Fabrick or ſtructure of the body of man reveaſed in diſſection. This we ſhall viſit only *in tranſcurſu*, and draw a tranſitory Landſchip of ſo much only, as may preſent the method of the Soules *Oeconomy*, and her manner of diſpenſing orders to each diſtinct organ of the body: of the former, we ſhall in a diſtracted reherſall, deliver our Collections.

The *Soule* (called *Anima*, by all the Friends of wisdome) is considered in a double sense (1.) as *Principium & altera pars compositi, seu ut Forma corporis*, the principall halfe of the composition, or the Forme of the body. (2.) as *Efficiens operationum*, the Efficient of all actions. Of the acception of the Soule in each of these respects, briefly; and first of the reasonable Soule as it is *related* to the body.

There is no one of the Philosophers, whose judgement is in health, denies the *reasonable Soule* to be the *Essentiall Forme* of Man. But, since there is a double Forme (1.) one called *Forma informans*, which being the beginning, and nobler part of the compound, constitutes its specifick *Essence, and differenceth* it from all other bodies. (2.) another, named *Assistens*, which doth not give to the thing τὸ εἶναι τοιόνδε, to be a specifick Essence; but to a thing already rich and perfect in its own nature, is *superadded* as *Accessary* or *Adjutant*, to the performance of some nobler actions then of its selfe it could

could enterprise: in this sence, is the *Pilot* said to be the Essence or soul of the ship, although he contribute not to the ship its εἶναι, its being, but as an Accessarie or Auxiliary joyned with the ship, is the Author or cause of its course and navigation, which the ship of its owne single power cannot perform: here it will be seasonable to enquire, *An Anima rationalis sit forma hominis informans, alteraque ejus pars? an verò tantum assistens, quæ homini jam perfecto & formam specificam habenti adjungatur, & nobilioris ineo operationis alicujus, puta intelligentiæ, causa sit?* Whether the Rationall Soul be the Form informing & one chief part of man; or only assistant, which to a man already complete in his own distinct essence, is adjoyned, and is the cause of some nobler operation (*viz.*) intelligence in him?

An Anima hominis sit ejus forma informans? an tantum assistens?

The *Arabian Averrhoes would* betray our reason to an absurdity, by his assertion, *Formam hominis esse cogitativam, &c.* that the Essence of man is *cogitative* (a narrow terme, he is pleased to assigne it) and absolutely

lutely distinct from the imagination, and that by this, man did make a distinct species: but the Rationall Soule is onely the *Assistant forme*. To this error our faith stands no way affected. We shall declare for those that advise us; that the rationall Soule is the true Essence of man, and the one and nobler moity of him.

Argument 1. For, if the Reasonable Soul were not the *Forma informans* of man, he could owne the attribute of rationall, with no lesse absurdity, then a ship can be allowed to be intelligent, onely because it carries a Pilot that is so.

Againe,

Argument 2. That, whereby any thing does operate, is the *Forme or Essence* of that thing, to which we ascribe the *operation*, for nothing operates but by its Forme; But to man, (*Quatenus* man) we attribute *reason* or *intellection*; Ergo, the rationall Soule is the *Essentiall forme* of the body of man.

It satisfies not, to conversion, that the Heretiques to this truth urge, that the understanding Faculty is accumulated to man *per Phantasmata*: for these *Phantasmes* have no neare

a relation to the intellect, then colours to the sight: and as colours, nor the subject on which they depend, can be capable of sight; so can neither the Phantasmes, nor their subject understand, but are indeed understood. Wherefore we may conclude thus.

That, whereby one thing is *in specie* distinguished from another, is its Essence; but man, (by the rationall Soule,) is distinguished from all other living Creatures. Ergo, *The rationall Soule is the Essence of Man.* *Argument 3.*

To this one foot of *Reason*, wee could add the other of *Authority*, to make this opinion current: but expansion, in contraction is a *Paralogy*.

The explication of this, ushers our reason to the solution of a second question, viz. *vtrùm Anima rationalis in omnibus hominibus sit una numero; an verò in singulis peculiaris?* whether there be but one numericall Soule in all mankind, or whether a distinct one in every individuall? *An Anima rationalis in omnibus hominibus sit una? an verò in singulis peculiaris?*

They that determine the reasonable Soule to be but *Forma assistens*,

dreame that it is not multiplied according to the number of men, but that there is but one single Soule in all the Species, which is the cause of intelligence in men. This is, *e diametro*, in opposition to truth, many waies. For, every *Forma informans*, (such as we have already acknowledged the rationall Soul to be,) is multiplyed, as the individualls are multiplyed. (2.) If we allow but one Soul to all men, it will be consequent that all men are but one man; for they would have but one and the same numericall Forme. (3.) The *Operations, and intellections or second acts* are multiplyed according to the number of individualls, for our intelligence is distinct from the intelligence of another. *Ergo*, the Soule, which is the *first act*, is multiplyed: For the diversity of *operations* depends on the diversity of *Formes*. (4.) In one and the same intellect, would be at the same instant, contrary opinions; for one man harbours one opinion, a second another, a third a quite contrary to both. But we should supererogate to light a candle to the Sunne.

From

From this position, that the Rationall Soule is the true forme of man, a second Quere receives a hint to insinuate it selfe, *viz.* *An eadem sit immortalis? seu, an possit sine sui interitu à corpore separari?* Whether this Soule be immortall, or whether it can bee divorced from the body, without the destruction of its Essence? For us Christians, it is the easie businesse of our *Faith*, grounded on the *Magna charta* of our Religion, to attest that the Soule is immortall, and that the excellency of it, is filed among those grand maximes, on which, as hinges, Christianity is moved. But whether it be not an object too subtile and sublime, for reason, though clarified by the bright perspective of *Philosophy*, to discerne, is an argument yet full of perplexity and trouble.

An Anima sit immortalis?

First, let us with *J. C. Scaliger*, grant that *God* alone is truely *immortall and incorruptible*; and infer, that there is one

Scaliger Exercit. 61. *sect.* 5. *& Exercit.* 307. *sect.* 20.

Solus Deus vere immortalis & incorruptibilis, quia salus ex se suum esse habet, atque à nullo dependit; Dei verò respectu omnia creata mortalia & corruptibilia sunt, quæ à Creatoris nutu deponi possunt ab ea essentia, in qua constituta sunt. Non corrumpuntur tamen quædam ut Angeli, & Anima rationalis, quia Creator non vult ea corrumpi, & nihil contrarii ipsis, à quo corrumpuntur, condidit, nec eas in materiæ immersit, ut extra eam nec subsistere, nec operari possint.

one immortall, which is ſuperior to to decay, or ruine, and being abſolutely ſimple in its owne nature, receives being from its ſelfe, and depends not on any ſecond: and ſuch is *God* only, and in reſpect of him all things may be ſaid ſubject to change by *Corruption*. For although *Angells* and the *rationall Soule*, which are in a third ſence, allowed immortall, becauſe they are never actually corrupted, conſiſt of no contraries, and are abſolutely ſingle in their Eſſences *a ſubjecto*: yet becauſe they are not abſolute, *à Cauſa*, have not their *Eſſe* from themſelves, but derive it from another, by which they may be returned to *Non-entities* againe. For every *dependant* is lyable, at the arbitrary reſolve of that, on which it doth depend, to be changed; and may at the pleaſure of its *principle*, be depoſed from that Eſſence, in which it was, by it, created.

But the reaſon why ſome created natures are not corrupted, is the *will and decree* of the *Creator*; who conſtituted them ſingle and ſimple without the mixture of a contrary,

(from

(from which they might derive corruptibility) nor ſo obliged them to matter, as that they cannot *ſubſiſt*, or *operate* without it. And that amongſt natures of this order, the rational ſoul of man is to be liſted; and that it may be ſevered from the body, without the ruine of its eſſence, is the task of the wiſer and modern Philoſopher to prove. *vid. Marſil. Ficin. de immortalit. Animæ. Lib.* 5. *Iclet. de Anim. Lib.* 3. *cap.* 5. *Queſt.* 16. *Fran. Picol. Lib.* 3. *de Hum. ment. Colleg. Conimbr. in Tract. de Anim. Separat. diſput.* 1. *art.* 3. *&c.* The ſtate of all which buſineſſe is briefly thus.

Every thing is known by its *effects*, and every form reveals it ſelfe by its *operations*; wherefore ſince the actions of man are ſo *Noble* and *Divine*, that they cannot be attributed to a mortal ſubſtance, deeply plunged in matter; it may without obſcurity be collected, that the rational ſoul, from which theſe tranſcendent and divine actions flow, is *immortal* and *ſeparable* from matter.

For the *intellect* does *abſtract* and deveſt

deveſt things of that *matter*, judgeth of them without the conditions of *matter*, *quantity*, or *figure*, contemplates them as unbodied and enlarged from the groſſer bondage of their materials, is not (as the frailer ſenſe) offended, either with the *multitude*, or *vehemence* of objects, but can comprehend things infinite in number, yet ſtil reſerves room for more, & can multiply their number to a higher finity, reflects on its ſelf, and is familiar with, not only others, but its own nature, and underſtands that it doth underſtand its own intelligence; can *decree*, and *repeal*, and *reſolve*, and labour with an inſatiable deſire of *knowledg*, *Eternity*, *Beatitude*, (which ſince it is uncapable of ſatisfaction in this life, we have reaſon to believe, that there is reſerved for it a future eſtate, in which this appetite ſhal be ſated) and can perform its actions without the inſtruments or organs of the body.

This of the Soul in her relation to the body.

The diſquiſition of its nature, as it

it is *principium operationum*, the efficient of all actions succeeds. To the description of it in this sence, the words of *Aristotle*, *Lib. 2. de anima. Anima rationalis est hæc immissa*, approach very near. But the soul must be granted simple, pure, immaterial, and unmixt, in a double respect. (1.) *ab objecto*, that its essence might not participate with the essence of objects, but be indued only with power to receive them. For, since the business of the soul is the *comprehension*, and *knowledge* of objects; and this can be performed only by *reception*; it is a necessary illation, that its essence must be *simple, pure, and unmixt* with the essence of objects. For, nothing, without an affront to reason, can be said to receive that, which is its own already by essence; *& intra existens prohibet alienum*. And this *immissio* is common to the rational soul with the *senses* also: For, they in like manner contain not their objects in themselves, but have only a *capacity* of *receiving* them in: but here's the difference, the senses are free and unmixt,

Anima immissa 1. ab objecto.

mixt, only *secundum quid*, and from one single *species* of *Ens* (for example the *Sight* is free only from *Colours* for their businesse is not about a plurality of Entities; but the rational soul is absolutely free from essence of all other things, as, being by the institution of God, directed to the *reception* and *admission* of all created Natures.

2. *Immista ab Organo.*

Again, the rational soul is by a peculiar manner *Αμιγὴς immista ab organo, nec cum eo permista*, Free, and inorganical, when it operats in acts *intelligential*, or *voluntary*, and performs its actions without the bodies assistance. For since to the performing those actions which are done in and by the body, there is a peculiar, harmonious temper of qualities, (for every particular reception expects a distinct, exact preparation and disposition) and by consequence, an equally tempered Organ of the same constitution, required; and since each distinct part of the human body hath a proper and distinct temper: but the rational soul is neither (as it is in it selfe)

obli-

obliged to any certain definite constitution, or composition of first qualities; nor affected by them; nor can there in the body be found any adæquate and proper Organ for it: we must confesse, that the soul in the dispatch of her businesse hath no dependance on the body, but is *immaterial*, and *inorganical*.

From this third immission of the soul, we have a cleer prospect towards her *operations*. For since she in *Agendo* is not obliged to the body, and that the actions of the body communicate nothing with the actions of the mind: it results a familiar truth, that the *understanding* and *will*, are *powers inorganical*, and do *Agere* of themselves; so that to *understand* and to *will*, are the *proper actions* of the *mind*: nor doth the mind understand by the body, or any instrument of it, as by a *Medium* necessary.

Indeed she is beholding to the *Imagination*, for while she remaines immured in this darke Monastery, the body, shee never understands without the assistance of the Phantasie

tasie, (*Aristot. Lib. 3. de Anima. cap. 7.*) yet not as *Organon*, but as *Objectum*. For it is necessary that intelligibles be conveyed to the *reason* by the *sense*. Wherefore, if any shall positively assert, that the actions of the minde are Organicall; and that the Rationall Soule doth make use of the subservient ministry of the *Braine* and *Animal spirits*, and *senses*, as her *Corporeall instruments*: We dare admit it, onely in the subsequent sence. That the Soule, while shee sojourns in the result of dust and ashes, doth not understand, without the operations of the Organs of the body præceding her owne operations: or that in her second and subordinate actions she becomes instrumentall, and uses the assistance of the Braine and Animall Spirits: but not in the least measure, when shee operates *per se*, and is undisturbedly imploy'd about her pure *intelligent*, and *pure will*: for then her sublimer conceptions and intellection tower

Hinc sagacissimus Romani Imperij reip. stoica, & sui ipsius Aurelius *Mare. Ant. lib. 10. cap. 1. Exclamat, Ah! quando veniet illud tempus ô anima, cum bona, simplex, unica, & nuda, cum gustabis perfecti amoris affectum? plena eris, nullius indigens, nihil desiderans, neque animati, neque inanimati ad fruitiones voluptuum, &c. l. 1. n. 10. Ex versione Merie. Casaubon.*

in an immateriall Sphere, ſuperior to that wherein the duller mediation of Organs confines her, and is her ſelf the ſubject of her owne ſpeculation, and intelligence and will. Which laſt act is by a new, yet convenient notion, called *Volition* *Scaliger, Exercit. 307. ſect. 3. & 9.*

And although the underſtanding Faculty doth ſuffer depravation in diſeaſes of the braine: yet that depends on no other reaſon, then that the ſubordinate, and ſubminiſtring faculties, which are Organicall and intereſſed in the Conſtitution of the braine, are injured.

Moreover, though the Humane Soule be plentifully furniſhed with all the Attributes of the Vegetative and ſenſible Soule: yet ſhe is enriched with two other diviner Faculties, (whereby ſhe tranſcends in excellence all other vegetable and ſenſitive creatures) (1.) the *Intellect*, whereby wee conceive and know; (2.) the *Will*, which inclines us to thoſe things, which in the judgement of our reaſon are good. The ſence of this dictated to *Hermes Triſmegiſtus*

1. *Intellectus.*

2. *Voluntas.*

megistus, this sentence; ὁ Ἄνθρωπος τῶν ζώων ἐπλεσονέκτει καὶ τοῦ κοσμοῦ διὰ τὸν λόγον καὶ τὸν νοῦν &c. *Homo brutis & mundo præstat ratione & mente.*

The difference of these two faculties is manifest, for it is one thing to *know*, and another to *desire* the things known. Further, these two operate diversly; the former, *Patiendo*, and by *admission* of the species, so that they may be intromitted to the mind; the latter *Agendo*, and by *prosecution*, so that the mind may be by extramission, advanced towards the object. Again, the diversity of their objects discerns the power of *knowing*, from the power of *Volition*: for, we know things *quatenus entia*, but we desire them *quatenus bona*.

This, by strong inference makes good, that the intellect is not ranked with, yet hath a power spiritually to admit and comprehend all other *actual Entities*.

Aristotle, possessed with an apprehension, that in the mind of man, beside that which hath a power to be made, all things, *viz.* by intelligence, and supplies the place of *mat-*

ter,

ter; there is also something else discharging the office of *Form*, which hath power to make all things, *viz.* actually intelligible: differenceth the intellect into (1) *Active*, and (2) *Passive*.

But to determine what this *Intellectus Agens* is, hath afflicted the braines of firmer heads then ours. Some (& those of the upper house of *Philosophers*) have voted it to be the Supreame wisdome, or some Dæmon, or Superior intelligence auxiliant to man. But these dreamers rove as wide off the sence of *Aristotle*, as of Truth. For his theame in *Lib. de Anima* is *Intellectus Humanus*: and in *Lib. 3. de An. c. 5.* he expresly calls the *Active Intelligence*, a certaine *difference* in the Soule. (2.) Againe; this *intellection*, which streams from the *Active intellect*, is setled within the region of ourselves, and under our own command, and is not transmitted immediately from God, or any other auxiliary intelligence (3.). Lastly, since God in the fabrick *of our intellect*, hath inriched it with a wealthy measure of illumination;

we ſhall blaſpheme the bounty and wiſedome of our Creation, to compell him to bee immediately ſupervisor and aſſiſtant to it in all actions. But the *Active intellect* is in the ſence of *Ariſtotle*, that difference of our *informator*, *our Soule*, which advanceth things *intelligible in poteſtate to the perfection of intalligibles in Actu*. For as an effect *Naturall* owes its production to an *Agent* of the ſame *genus*; and to Effects *Artificiall* is required a diſtinct *Art*: ſo to the worke of the mind, which is the act of intelligence is required an *Agent*, not Heterogeneous, ſeveral and diſtinct from, but what is a part or certaine difference of the Soul.

Intellectus Agens.

And although this *Intellectus Agens* be, by the ſeverity of ſome judgments, proclaimed an exile from the borders of Philoſophy: yet that it will become the juſtice of our reaſon to welcome it, is demonſtrable from this truth. Whatſoever action is done, is performed *in aliquo, et ab aliquo, ſed alio*, in, and by ſome ſecond that is different: Now univerſals are made, the intellect being

being *Passive*: *Ergo*, there must be some other *active* power to make universals. For since every patient requires a determinate Agent, and nothing in nature can deduce it self, *è potestate in actum*: and since our understanding is constituted only in the power, or capacity to admit objects actually intelligible, and that by reception: it follows, that if we allow a Passive, we cannot deny an Active intellect; and if we remove one, we lose both. Wherefore an *intellectus agens* is necessary for this reason, that it may make all things actually intelligible, and translate the object *de ordine in ordinem*, from the capacity to the act. For since every object or phantasm is material, and so under the opposite condition of the power intelligent, which is abstracted, and immaterial, it cannot be comprehended by the intellect, until it become abstracted, immaterial, and proportionate to the intellect; and this can never be done, but by a *power abstracted*, and an *essence intelligent*.

From this we may derive infor-

mation, that the *Office* of the under-ſtanding is *Agere* (*i. e.*) to advance from the *Capacity* to the *act*; and of objects intelligible in *Potentia*, to make them intelligible in *actu*.

This office of the underſtanding the Philoſopher explains by that analogy or ſimilitude, which it holds with *Art*, *Nature*, *Habit*, and *Light*. For it is as it were the *eye* of the minde, and is as neerly related to objects, as Light to Colours. It ſurveyes and illuſtrats the phantaſmes or objects, naked and deveſted of thoſe material conditions, which like clouds, benight their intelligibility, that they may be reinveſted with the brighter nature of intelligibles; and thus like prepared Brides be preſented to the embraces of the Paſſive intellect: juſt as colours tranſmit their image to the ſight by the *qualification* and *aſſiſtance* of *light*.

But this illuſtration, illumination, or qualification of the Phantaſmes, is not done *Formaliter*, ſo that they retain the impreſſion of any quality, nor *objectivè* only, but

effective:

effective; because the active intellect as an external *light*, doth by the association of its own lustre, sublime the objects to the production of the image intelligible: Neither is the *intellectus agens* required only *pro subjecto*, for a subject, but hath an other part to act, *viz.* in the Passive intellect, to produce the act of intelligence, by representing to it, the object in its intelligible species: and this it performes, when associated with the illumined object, it produceth the image of the intelligible to the passive intellect. Hence may we collect, (1.) on what, (2.) in what manner the Active intellect does *operate*; for it is required to the performance of both actions, as wel that it operats on the objects, as on the Passive intellect; but on each in a distinct and several manner: for it is joyned to the phantasmes before the act of intelligence; and indeed, while they are yet remaining in the imagination, where illuminating them, it becomes their *Form*, whereby they are constituted the *Objectum motivum* of the Passive intel-

intellect: after joyned in commission with these objects thus illuminated, it operats on the passive intellect, by producing in it the species intelligible; and by sequel, the *intellection* or act of understanding.

But this *intellectus agens* doth not understand, *quà Agens*, since it receives not the images or notions intelligible, although it *produce* them; neither is sited in the capacity of intelligence, but is the intellection in the Passive intellect, as in its subject, wherefore this is called *intellectus Formaliter*; the other only *effectivè*, because it effects the intelligence.

Intellectus patibilis.

The intellectus [illegible] *Passive*, is, as it were the *matter*, or *subject*, on which the images intelligible are impressed. Hence it derives the denomination of *Patient* and *Patible*, for it is passive in the admission of the species, by the intervention, or mediation of the Phantasms. This is also called *intellectus possibilis, et mens potestate*; because it is endued with a capacity to be all things by intelligence. But to reveal the dark

and

and mysterious sence of these words, *the understanding passive hath a capacity to be made all things by intelligence*, we must be illuminated by a beam of that refulgent Constellation in the Firmament of Learning. "*Jul. Cæs. Scaliger Exercit.* 307. Sect. "6. *Principio* (*inquit*) *nego tibi illud* "*à Philosopho dictum esse; intellectum* "*nostrum esse omnia essentialiter, aut* "*formaliter: Sed est omnia subjectivè, si-* "*cut Materia prima: quæ non sit Equi* "*essentia sub equi forma, sed remanet* "*id, quod erat substantia quædam: ex* "*qua & forma, sit hoc aliquid. Alia* "*tamen ratio est in intellectus informati-* "*one. Ipse enim non est potentia pa-* "*ra, ut materia prima, quæ reducatur ad* "*hoc, ut actu sit hoc aliquid per for-* "*mam. Sed ipse forma nostra est substan-* "*tialis, separabilis, incorruptibilis, æ-* "*ternus, ex quo tanquam ex subjecto* "*essentialiter perfecto, & specie, quam* "*recipit sit intellectus informatus: non a-* "*lius a seipso: nisi sicut Cæsar edoctus, sit* "*alius à seipso: propter receptas species* "*accidentales: Non igitur sit intellectus* "*simpliciter, nec sit ipsa species, sed sub* "*specie.*

The reflex of all which is, that the intellect Passive, is not capable of being all things *Essentially*, but *Subjectively*.

As in this, which concernes the first difference of the understanding, we have exercised the *patience*: so we shall the *mercy* of *Candor*, and presume forgiveneſſe if we adde: that the intellect Active and Passive are not *Essentially and Really*, but onely in the *reason distinct*. For, two internall Formes cannot be united by new accidents: and both to effect, and receive an Action *immanent* (such as is the intellection) is required a principle *single* in Essence. Wherefore our sense is, that the Essence of the Active and Passive intellect, is one & the same: and that *quoad Esse*, there is but one intellect; which, in that it makes things intelligible, illustrates the Phantasmes, and intrust's them to the custody of the Passive, is called the Agent: but in that it is the *Subject Recipient* of abstracted and immateriall objects, it deservedly ownes the name of *Passive*.

In

In this ſeamleſſe Veſture, the *Underſtanding*, the factious ſpeculation of *Ariſtotle*, would eſpie a ſecond rent; and untwiſt it into an intellect (1. in *Habit*, and (2.) in *Act*: but Truth dictates, that theſe are onely the *degrees* of one, and the ſame intellect: and are not by any Law, but that arbitrary power of diſcourſe, warranted for *differences*. 2. *Intellectus in* 1. *Habitu.* 2. *Actu.*

For, that is the intellect in *Habit*, which hath the object treaſured up in the wealthy Magazine of the Phanſy; and by one degree of perfection tranſcends the intellect in poſſibility. For this is in the capacity to the *firſt* Act; but that for the *ſecond*, or, is prepared to admit the action of the *Agent*.

Concerning this *Zabarell* hath other thoughts; and believes, that the mind of man is at firſt *rude*, *fallow* and *unapt* to the knowledge & comprehenſion of intelligibles: but after, by the *acts of intelligence multiplyed*, it acquires ſo large an *hability* and *aptitude* to comprehenſion: that it can, without labour and difficulty, at its own pleaſure, addreſſe it ſelf to the

im:

imagination, and immediately understand: and that the intellect enriched with this faire Hability, is called the *Intellect in Habit*: but when the Passive intellect doth actually operate (*i. e.*) actually discern the object presented, it is called the *Intellect in Act*.

3. *Intellectus.*
1. *Speculativus.*
2. *Practicus.*

The last distinction of the intellect is into (1.) διανοητικὸν, *Speculativum*, & (2.) πρακτικὸν, *Practicum*. Which termes doe not constitute a *duality* of powers intellectuall, nor insinuate, either the *differences* or degrees of the same intellect: but implicitly expresse both Faculties of the rationall Soul: by the Epithite *Speculativum* the *Understanding* properly so called; by *practicum* the *Will*. For when the intellect, in regard of its *apprehension* of a thing; and again, according to the affirmation or negation of the true or false, cannot be expressed by any more convenient name then *Speculative*: it followes, that this difference arose in respect of the third attribute of the intellect practicall, (*viz.*) the *prosecution* and *aversion* or *flight*, which are acts of the *Will*.

The

The *Operation* of the intellect (to which all the offices of these degrees are destined) is *Intellection*. Which is not the same with the images intelligible, but really differs from them; and is more truly defined (1.) by the *reception* and *apprehension*, (2.) by the *judgement* of the species intelligible. For the intellect exerciseth a double operation on the object; the first a *simple* or bare apprehension or Knowledge: the second (called Composition and Division) a *compound* apprehension or judgement, which consists in the *assent* or *dissent*. Hence is the intellect said to be double also (1.) *simple*, when it knows an object simple and incomplex. (2.) *Compound*, when it judgeth a proposition true, or false.

Intellectus operatio.

1. *Simplex.*
2. *Composita.*

The object of intellection, which both moves, and determines the understanding, is *Ens*, accepted universally, and as it comprehends both *materiall* and *immateriall natures*; yet allayed with some necessary qualifications and conditions: and first *Universality*; for that *Ens* may be received

Objectum intellectionis Ens.

1. *Universale.*

received and discerned by the intellect, it must be abstracted and separate from singulars: (2.) *intelligibility*, or sublimation from the fæculent condition of matter: (3.) *verity*. This object, thus, by the Active intellect adæquated, conditionated, and proportioned to the mind, is called *species intelligibilis*, the *image intelligible*: as that which the courser sense receives, is called *species sensibilis*, the *image sensible*.

2. *Intelligibile.*

3. *Verum.*

Phantasmata illuminata, quid.

These intelligible Species are the *Phantasms* illumined, irradiated, illustrated (*i.e.*) extracted from the dreggs or conditions of matter, and by the Active impressed on the passive intellect; and by the rule of Consequence, are *Accidents spirituall and indivisible*. For not the substance, but the accidents, find admission to the sense. *Scalig. Exercit.* 303. *Sect.* 7. Wherefore onely accidents constitute the Species in the Understanding. Among these are *Locus*, *Tempus*, & *unitas finita quantitatis*; which being removed by the discretive power of the intellect, there will reside the *substantiall universall* Species

Species: as when you see any disguised or armed, first you discerne the armes; when they are sublated, the man himself.

To relieve our assertion (that the things which are to become objects to the intellect, must be stript, and disroabed of matter and Conditions singular) from the ambush of a Contradiction; it will be opportune to resolve; after what manner the understanding can know *singulars*; or whether it be capable onely of *Universalls*? Our determination is, that the mind of man doth also comprehend singulars. For since all the subordinate *cognoscent* Faculties are so, by mutuall concatenation united, and as it were identified, that the end of one action is the beginning to another; and whatever is discerned by an inferior, is also familiar to a superior Faculty: but the sense and imagination comprehend *singulars*: wherefore, by necessary inference, the mind knowes *singulars* also. And from this knowledge, is man enabled to compare, and ballance an *Universall* with a *singu-*

Mens humana singularia cognoscit.

lar;

lar; and the mind formes singular propositions, that from them, it may collect *Universalls*: and so often corrects the senses judgement of singulars, as they, by reason of their disaffection or depraved disposition to the objects, are guilty of delusion & aberration. But this cognition of singulars is wrought by Accidents; for from proper singular accidents, we extract the notion proper to singulars; as in like manner, from the notions proper to the species, we pick out the Phantasme proper to the species.

Intellectio. *Intellection*, or the Act of understanding is vulgarly disunioned into

1. *Recta.* (1.) *Rectam*, direct or simple. (2.)
2. *Reflexa.* *Reflexam*, reflex, or ingeminated.

Our intellection is direct, when at the first simple apprehension, the Species arrests and wholy possesses the intellect, so that it desists from any further prosecution, or disquisition: as when it is barely imployed in the first conception of a man, Ox, or Horse, &c. *Reflex*, doubled, or reciprocated, when the minde reflects on the knowledge of its selfe, and

doth

doth understand its owne intellection, and discernes it selfe to be an intellect; that is an Essence pure and immateriall, a bright nature, irradiated by the reflexive glory of the Eternall Wisedome.

Here our Aversion to obscurity may excuse a short digression, if we insert, that, by *Abstraction* we intend, a separation of singling (in the understanding) out of one thiug from all others. For in abstraction, not all things inherent in the subject are knowne, but onely that which is abstracted. *V. G.* to abstract *Animal ab Equo*, the living Creature from the Horse; is to consider onely the Animality, the Equiety being altogether incousidered and superseded. *Abstractio quid?*

Lastly, *Voluntas the will*, is the other power of the rationall Soul, whereby we *prosecute* or *abhor*, *embrace*, or *reject* the objects known by the Understanding: Or, is the *intellect expanded & diffused, to admit, or execute* what it understands. This also by some, is termed *Appetitus Rationalis*, *the reasonable appetite*. For as the *sensitive appetite* followes the knowledge of *Voluntas.*

of the *Sense*. So doth a proper and peculiar desire of fruition attend the knowledge of the mind; which, for distinction from the former, becomes the appellation of the *Will*: and that the *rationall* doth absolutely differ from the *sensitive* appetite, is familiar from this, that they have too frequent Conflicts and Contentions betwixt them. This *Antipathy* or *Duello* betwixt these two *indigenæ*, the ingenuous frailty of Saint *Paul* discovered to be radicated, beyond all possibility of reconcilement, untill our Exaltation from the residence of sensuality; therefore with τάλαιπωρος ἐγὼ ἄνθρωπος, τίς με ῥύσεται, &c. Ejaculates his Vote for Emancipation from the tyranny of Flesh. And were this Philosophy lectured to the Junior Pharisees of our Age (though, would Charity dispence wee may fear their incapacity of Fixation, but by ignition, or reduction, but by distillation *per sensum*) it would deride their ambition of singular and divine purity, and humble them to confession of their

Videatur Aurelij Prudentij ψυχομαχία, seu de Compugnantia Animæ, liber.

their large ſympathicall diſtemper from the Common wounds of Humanity. But we ask pardon for our Parentheſis.

The object, which provokes the will, is *Bonum & Malum, Good and Evill*; ſo conceived by the underſtanding and tendred to the will: hence it proſecutes good and abhors evill. The Actions of the will are (1.) *Volition*, (2.) *Nolition*; and theſe are double, (1.) *Elicitæ* choſen or elected, which the will, by itſelfe, and not by the inſervient Faculties, doth ſelect and execute: (2.) *imperatæ injunctive* which the Will commands to bee done by the ſubordinate powers. *Ejus Objectum. Bonum & malum.*

Theſe *ſubſervient Faculties*, which by the Law of Fate, are ſubjects to the Scepter of the Will, are (1.) the *Locomotive*, (2.) the *Senſitive Appetite*. For our *motion* and *quieſcence* ſucceed each other at the pleaſure and command of the Will: But that *dominon*, which the Will, before our Grandfathers *apoſtacy* from the rule of reaſon, extended over the *ſenſuall Appetite*, is contracted and

diminiſhed by the uſurped incroachment of *Senſuality*: and that harmonious concord, which at the primitive conſtitution, was maintained betwixt both faculties, ſo confuſedly infringed; that the revolted *ſenſitive Appetite*, renounces all conformity to the ſober *adviſo'es* of the rationall Will: and may, with an eaſie Metaphor, aſſimilate *Ovids*, *Fertur equis Auriga, nec audit Currus habenas*: or that diviner diſtich of *Hermanus. Hugo Lib.* 2. *de piis Votis.*

Frena nihil patitur minùs, atq; libido vovendi,
Nec ſe lege ſinunt libera vota premi.

There's naught abhorrs Confinement like our luſt,
Nor are our Votes Conformed to what's juſt.

But to a *Lordſhip* over the *Vegetive Faculty*, the Charter of the *Will* extends not: for that workes poſitively, and abſolutely naturall, neither is our *Nutrition*, *Accretion*, or *majoration*, at the improvement or *diſpenſation* of the *Will*.

CHAP:

CHAP. II.

Of the Traduction of the Human Soul.

THE second grand Remora's, which retard the Soul, in her voyage for the discovery of *wisdom*, and Charme her Compasse to a variation from the pacifick Sea of *Truth*, to the dangerous Torrent of *Error*; are (1.) *servile Credulity* (2.) *Vainglorious Singularity*. To the first, most have cowardly, or supinely, prostituted their habilities of disquisition; and have so firmly vowed implicite homage to the superstitious Soveraignty of Antiquity, that, if but a *Tradition* be contradicted, it proves Criminall, and *Reason* and *Experience* (the two best Counsellors) are deposed as *innovators*. The other inveigles her disciples into the opposite extream: and would demolish the substantial buildings, on which the reverend hand of *Authority* hath recorded Truth, in deep ingravements: that on their ruines, the pageant superstructures of *soli-*

tary dreams may find advancement. From this we may (we hope without Treason againſt the Majeſty of juſtice) affirm our endeavours diverted from the former, we deſpair not to relieve our *Reader*, who noe ſooner, with but halfe an eye, glances on the inſcription of this leafe; but preſumes our diſcouſe *Erroneous*, becauſe *inquiſitive* into the Antient and popular aſſertion, that the Human *Soul is created by infuſion.*

If any ſhall here arreſt us, for an incroachment on the ſacred *royalty of Theology*; our *plea* is, that whatſoever of the Human Soules Originall is within the borders of reaſon, lyes in Common alſo to *Philoſophy:* that our thoughts are ſo clear from deſign to propagate *Hæreſie*, or oppoſe our Conceptions to any *Fundametnall* of Faith: that we humbly tender them as *Poſitions* moſt probable and conſentaneous to Verity; but not *obtrude* them as *Magiſteriall dictates.*

1. *Theſis.* Our firſt Article is; that the Human ſoul is, by the hereditary vertue of the divine benediction, *Creſcite*

cite & multiplicamini, propagated and traduced, by the ſeed of Parents to their iſſue.

Our firſt Argument hopes ſupportment from that *Axiome*, *Simile Simile generat*, ſo appoſitely atteſted by *Ariſtotle. Lib. de An. c.* 4. *T.* 34: in theſe words: φυσικώτατον τῶν ἐν τοῖς ζῶσιν ἔργων, ὅσα τέλεια καὶ μὴ πηρώματα ἢ τὴν γένεσιν αὐτόματον ἔχει τὸ ποιῆσαι ἕτερον οἷον αὐτὸ ζῶον μὲν ζῶον φυτὸν δὲ φυτὸν, ἵνα τοῦ ἀεὶ καὶ τοῦ θείου μετέχωσιν, εἰ δυνάνται &c. rehearſed thus: This operation, of all other, is moſt naturall to Animals, thoſe, I mean, which are perfect, not defective or mutilated, and are not generated without ſeed; for every one to procreate his like, an Animal, an Animal, a Plant, a Plant: That by this way, as far as they are able, they may enterpriſe perpetuity. For when the wiſe Creator conſtituted every thing, in its kind, perfect, but man, as his *maſterpiece and abridgement* (in whom the idæa's of all other created natures are collectively refulgent) moſt *perfect* and *exact*: he cannot juſtly owne the attribute of perfection, but muſt

Argument 1. *Simile, Simile generat.*

be enrolled amongst *Aristotles* πήρωματα, *Mutilates*, if he be destitute of power to procreate another man, perfect and altogether such as himself. This hath prevailed upon most Naturalists & many Divines, to conclude; That man does absolutely procreate man and the whole man, which could not be, if the *procreator* did not communicate the Soul to his issue, for since man consists of a body and a Soul, if the Soul be not communicative from the Genitors, man cannot propagate man.

This also is consentaneous, to the sence of *sacred Scripture*; *For God* (*Gen.* 1. *verse* 28.) distributed to man equally, with all other living creatures, his virtual benediction of *crescite & multiplicamini*: by the lineal inheritance of which, the whole man does propagate the whole man. And were it not a frustration of the *Energy* of the Almighties blessing, if our opinions concede the Soul *deduceable*, from any *Extrinsec cause*.

Arg. 2. For whatsoever belongs to the *essential integrity* of human nature, doth

doth man propagate by generation; but not only the body, but the Soul alſo is *eſſentiall* to human *integrity*. *Ergo*, the ſoul is alſo propagated by generation. *Hence Damaſcen. Lib. de Orth. Fide*, defines generation to be *ex concurſu maris et fæminæ ſimilis ſubſtantiæ individui procreationem*.

Neither is the ſouls ἐξοχὴ, *or tranſcendent excellence* to be derived from her Creation: For not *quicquid creatur eſt immortale*; but rather every created nature, if we regard its principal, is *per ſe* mortal: and the reaſon why ſome natures are mortal, others immortal, is not deducible from the *condition* of their *materials*, but from the *omnipotent, ſic placuit, and voluntary decretal* of the Creator; who created whatſoever, whenſoever, and howſoever he pleaſed. And ſuch is the human nature, as the eternal will of God reſolved it, and firmly conſerving the eſſence granted, is according to the *inſtitutiõ of the ſame wil propagated.* Argu: 2.

Our other *firmer Baſis*, on which our affirmation of the Souls *extra-*

duction relies, is the propagation and hereditary transmission of sin together with the Soul, from our first Grandfather *Adam*, to all posterity, and is erected by an argument, betraying to *impossibility or absurdity*, thus.

If the Soul be created by infusion, or infused by Creation; God either created the Soul evil and depraved, or infused a tincture of evil into it, after it was created: both which, while they allow God to be the immediate *original* of the Soul, inferre a dangerous impiety, and conclude him the *Author* of sin. Or secondly, the Soul being by her creation, *perfect, white, and immaculate*, doth contract her *inquination, corruption, and blemishes* from the body. But according to the Canon Law of Metaphysicks, no *material* can *agere* on an *immaterial*, by a *natural act*. True it is, by a general confession, that the customary inclinations of the mind, do more then frequently confesse their subjection to the influence of the constitution of the body; but this is done *actu morali*, by

by *inclination* and *diſpoſition*, not by *impreſſion* of any *real*, *Phyſical*, *miaſme*, or *pollution*: by the ſame way whereby the ſtars rule us, and God the ſtarres.

2ly. Our Saviour, (*Mat.* 15. *V.* 2. expreſly declares, that from the *Heart*, as from a polluted fountain, do ſpring the ſtreams that render man ſullied and impure; and that which commeth out of the mouth defileth man, (*i. e.*) θυμὸς καὶ ἐπιθυμία, the *mind*, and radical *Concupiſcence*, are the common ſources, from which all ſin is derivative.

Or thirdly, we muſt compulſively concede, that ſin is tranſmitted or deſcended from *Adam*, to us, by way of *imitation*, not *propagation* or *production*: which error of *Pelagius* is hiſſed out of the Schooles by the Arminians.

But *Peter du Moulin* conceives to himſelf an eaſie protection from the danger of theſe rocks, by affirming that God created the Soul morally, good and perfect, but (by ſupervention of *Adams* πεῖρασμος, precipitous fall) deſtitute of ſupernatu-

rall

ral light; and therefore becauſe the Soul is, by the natural ſwindge of Eſſential appetite, rapt on to good; but for want of the manuduction of divine light μυωπάζει is purblind, and inſufficient to ſteer it ſelfe to the true ſupream good, *viz.* God; it violently purſues the creatures, *viz. Bonum jucundum et utile:* and thus by aberration from, and dereliction of the principal and true good, doth become ſpiritually depraved and tainted.

But this way of evaſion is unſafe, upon a maturer ſounding, and this reſolve (without impeachment of the honour due to ſo much learning) too narrow a *tablet* to pourtraict the nature of Original ſin on; as if it could be nothing but barely the *privation* of *ſupernatural light*, by the dictates whereof, it might *direct* to, and *fix* on the *ſummary good*, where the Soul is purely *paſſive:* When *Gen. Chap.* 8. *Verſe* 22. it is intituled, *Figmentum Cordis*, *the contrivment or Poeſie* of the heart, evill, and totally corrupted from the cradle; becauſe, like a Potter, it moulds, faſhions,

ſhions, and actuates luſts, and concupiſcence; as if in our ſoul were δύναμις πλαστικὴ, *a conformative* power, whereby our hearts can faſhion and proportion evil. Truly the cauſe *procatarctica*, or provocative, is from without; but συγγενικὴν, *the native, and preconceptive*, is in the very Soul.

2ly. That univerſal determination of Divines, that the Soul in ſupernaturalibus eſt *deprivata*, in naturalibus *depravata*: Whence therefore is this Cymmerian dimnes and obſcurity of the underſtanding; even in the buſineſſe of her own proper objects (*viz*) *naturals and intelligibles*, to which is no way required the aſſiſtance of *divine light*? when our *ingenerated protogenitor Adam* (before his tranſgreſſion, contracted a black cloud over his reaſon, and obnubilated its primitive clarity) was exactly read and experienced in the natures of Animals, and hence *accommodated appellations* to each diſtinct ſpecies.

3ly. Why in the Sacrament of Baptiſm doth the element of water

ter *symbolize washing, cleansing*, and *purging*, unlesse in implicite relation to our *uncleannesse*, and the *Minera* of our *polluted Nature*, the *reaty*, or *guilt*, though not the *reality*, whereof is absterged and expunged by Baptism? And were it not a *Parergie*, we could urge the same of Circumcision.

4. Lastly, if we perpend the nature, and symptomes of the primitive crime of *Adam*, we shall discover a *tract* or *view* of it deeply *impressed* in all his succession; so that thence we may sympathetically confesse it to be *malum hæreditarium*, an evil radically and lineally descending to all posterity: *a desire of knowledg, a palliation, and extenuation of the fact, a translation* of the guilt on others, *at quod nemini obtrudi potest; on God himselfe.* All which are the *Vestigia* of the first sin, and evidently conclude in the phrase of the sacred *Historiographer*, *Gen. Chap.* 5. *Ver.* 3. that *Adam* begot sons in his likenesse, after his own *image*: which *image*, all Divines conclude, to include *Original sin*, and the *penalty*

of

of *eternal* death, which he propagated in his issue, in the room of that *Majestick image of Divinity*, received at his first inauguration to manhood.

Our other position (in the opinion of which we are likely to end our daies) is, *Animam humanam initio Conceptionis statim adesse*: that the human Soul is present in the very first moment of conception, assoon as the *prolifick seminary Emissions* of both sexes are mixed, by mutuall *incorporation*, prepared to *Fermentation*, and *conserved* in the womb, when the *operation conformative* begins; and that there can be properly assigned no other *cause efficient*, which should enterprise the *conformation*, but the *rational Soul*. *Thesis* 2.

For whersoever the proper operations of the human Soul are, there must her presence be acknowledged also; but in the first conception her operations are visible. *Ergo*, she must then, and there be present also.

The *operations* of the Soul in the Conception, are (1.) the *conformation*

on of the *membranous*, ſcarfs that invade and *enſhroud* the Embyro (2.) The *Embryo* it ſelfe. (3.) the *augmentation* of it; for a *Meridian* truth it is, that no ſooner are the parts of the Infant *delineated*, and their *rudiments* proportion'd, but they progreſſe to *majoration*, or *augmentation*; but in the augmentation, the Soul is communicated to the *acceding* parts; wherefore it is neceſſary that thoſe parts which *accreſce*, or are aditional, ſhould partake *Animation*, in the very firſt *augmentation*. For how it grates the harmonious ears of reaſon, to allow the infant after birth, to be *Majorated* by the influence of another Soul, then that by which it was augmented in the womb.

That the *Conformation* begins with the *Conception*, we are ſolemnly invited to concede, as well from the unceſſant and early *activity* of Nature, (in which *idleneſſe* can be imagined with no leſſe abſurdity then *Emptineſſe*) as by the *autopticall* obſervation of *Abortive Embrio's*. *Hippocrates Lib. de Natura Pueri, deſcribes* the Geniture,

niture, which his Fæmal Harper, by obeying his Pagan preſcript, on the ſixth day, after Conception, danced to abortion, in theſe words, οἷον εἴ τις ποῦ ὤμου τὸ ἔξω λεπύριον περιέλοιεν, ἐν τῷ ἔνδον ὑμένι τὸ ἔνδον ὑγρὸν διαφαίνοντο. Τρόπος μέν τις ἦν τοιοῦτος, ἅλις εἰπεῖν. ἦν καὶ ἐρυθρὸν καὶ στρογγύλον· ἐν δὲ τῷ ὑμένι ἐφαίνοντο ἐνεοῦσαι ἶνες λευκαὶ καὶ παχεῖαι, εἰλημμέναι ζῇν ἰχῶρι παχεῖ καὶ ἐρυθρῷ, καὶ ἀμφὶ τὰ ὑμένα ἔξωθεν αἱμαίλωπες, κατ' δ' μέσον τοῦ ὑμένος, ἀποῖχε λεπτὸν, ὅ τι μοι ἐδώκεεν εἶναι ὀμφαλὸς Κἀκείνῳ τὴν πνοὴν καὶ εἴσω καὶ ἔξω ποιεῖσθαι τὸ πρῶτον. καὶ ὁ ὑμὴν ἐξ ἐκείνου ἐτέτατο ἅπας, περιέχων τὴν γονὴν &c. rehearſed thus; as if one pil of the outward ſhel of an Egge raw, in which the humour contained in the inward membrane is tralucent: very like this was that liquour, moreover red and round: but there were viſible white thin Fibres contained in the membrane it ſelfe, on the outward part diſcoloured with blood like thoſe that are bloodſhotten, in the middle of which was diſcerned ſome ſlender thing, which I conceived to be the navil, and that by it, the Embryo did firſt tranſpire, and from this proceeded the

the membrane that totally inveſted the Geniture. And *Lib. de Carnibus*, he poſitively delivers, that the conceived, hath on the ſeventh day all parts requiſite to integrity, and that an abortion of this ſeptenary age, put in clear water to a ſubtle inſpector, exhibits all the rudiments of the organical parts.

Fælix Olater in quæſt. medic. quæſt. 1. Preſents the ſeptenary ſlips, which he hath frequently ſervey'd, thus. Firſt, the Plaſtick, or *conformative faculty* obſcurely *ambuſcadoed* in the ſeed, *iſſues* forth & *Marſhals* the nobler parts of the ſeed, which flowed from the *three principal members* of the Parents, into *three bullous conglobations*, *or ſpherical apparitions*, which are the rudiments of the *Brain*, *Heart*, and *Liver*; and *rangeth* the other adherent portions into *Limbs*, which attain perfection, (*viz.* of *delineation*) the firſt week ſo that the *Embryo* then elapſed, appeareth an *Orbicular*, *concreted*, *informous maſſe*, diſtinguiſhed with theſe three *globes*.

The more exquiſite inſpection of

of *Sennertus* (that great Secretary to Nature) advanced his Scrutiny to to a nearer familiarity with this retired abstrusity of Generation: for in an *Embryo*, not many daies after Conception, effluxed, hee delighted his eyes with the full vision of these three *Orbes*, four *other portions assigned for the arms and leggs*, *and two minute black spots*, or *atomicall punctio's* in the *Surpeam Orbe*, which he (and on good reason) conceived to bee the *delineated rudiments* of the eies.

This being thus, it results a serene and Calme Truth, that the *Conformation* or *Organization* of the *infant* begins in the very *punctilio* or first *moment* of *Conception*. And this whispered to *Macrobius Lib. in somn: Scipion. Cap.* 6. his assertion; that seed, which does not within seven hours after *injection relaps*, is to bee accounted *animated* and *enlivened*. And of our faith was *Lod. Mercatus Lib. de Morb. Mulier. Cap.* 6. for hee concludes thus; when the sperme of both sexes is admitted into the wombe, by the vigorous and impregnating warmth of the same

cherished, regulated, and not within seven hours effused, we are to believe that the woman hath perfectly conceived. For this reason *Hippocr. lib. de Genitura* instructs us, to compute the Conception, not from the seventh day; but from the intromission, and retention of the Geniture.

1. *Tertul. Lib: de Anima.*

Neither are we destitute of the Soveraign hands of reverend Divines to erect this our opinion. For *Tertullian* concludes *in ipso & ex ipso seri hominem; & vium esse a primordio semen* & Gregory Nyssen: *posteriorem esse originem Animarum, ipsaque recentiores esse Corporum constitutione, ne mo sana mente præditus in animum induxerit; cum manifestum sit, nihil ex inanimis vim in sese habeat movendi, itemq; crescendi,* &c.

2. *Gregor. Nyssen. Lib. de An. & resurrectione.*

That there can be no other *Efficient Cause* properly assigned, which should attempt and finish the *Conformative Work*, but the Rationall Soul is clear from this; that the Adversaries to this assertion break that statute, *Entia non sunt temerè, & citra necessitatem multiplicanda*, and incurre

incurre the præmunire of thoſe, who on a miſtake of *Ariſt. Lib. 2. de Gen. Animal. C. 3. Hominem primò vivere anima vegetante, hinc ſentiente, tertiò Rationalem accipere*, abſurdly dream a *Trinity* of Souls in the Human body.

Thus ſolid *Reaſon*, *Experience* made up with ſtubble, and multiplied obſervations, and learned *Antiquity*, Conſpire in one firm triangular Baſis to become our Aſſertion's ſupportment. On which to proceed to ſuperſtructure; though it might mount our ſpeculation ſome degrees nearer Divinity, then any other pillar in the whole Theatre of ſublunary knowledge: yet it would tranſgreſſe the rule of *Contraction*, which forbids the impoſſible ſociety of *Enlargement*. Wherefore it is time we humbly reſign it, to receive *Ornament* and *perfection* from the bounty of ſome more learned hand.

And thus have we glanced on the Soul in a thinn, blew Lanskip, and through the obſcurity of her *Operations*. To gaze on the naked and

lively glories of her entire *Nature*, ſuch as it is when ſtrugled from the Eclipſe of Fleſh, mortality is unqualified; and we muſt ſuſpend, untill our eſtate of Glory. For *Solomon*, whoſe enlarged ſpeculations ſoared in a Sphear, ſuperior to that wherein our dull Conceptions flagg, could approach her radiant beauty onely by a faint reflexion, thus *Wiſdom cap. 7. ver. 25. She is the breath of the power of God, and a pure influence ſtowing from the Glory of the Almighty.* ver. 26. *She is the brightneſſe of the everlaſting light; the unſpotted mirror of the power of God, and the image of his goodneſſe.* ver. 27: *And being but one, ſhe can do all things: and remaining in her ſelf, ſhe maketh all things new*, &c.

Wherefore let us turn over leafe, to our eaſier Leſſon, the Body.

CHAP.

Chap. III.

Of the Human Body and its Functions.

THE Human Body is, by the Eternall Architect, contrived and composed of Parts (1.) *Similar* or simple, which are so subdivisible, that every minute, atomicall particle is of the same substance with the whole: (2.) *Dissimilar*; Compound, Organicall, or instrumental, which may be resolved, or undone, into lesser compound parts substantially different; as the Hand may not bee divided into other hands, but into Bones, Muscles, Veines, &c. To the Similar and Dissimilar, is required Unity and Integrity: to the Similar, considered distinctly, is required a just harmonious Temper: to the Organicall is required decent Composition and comely Conformation; which according to the Variety of Actions, in each distinct member is various and severall.

1. *Similaris.*

2. *Dissimilaris.*

The Temperament, Crasis or *Temperamentum quid?*

Conſtitution, is one moderrte, harmonious, actually ſimple quality, reſulting from the intenſe degrees of the four firſt Elementary qualities, by mutuall Action and Paſſion in Commiſtion, refracted and allayed. And this is double; (1.) that which belongs to the Body. *quatenus* ſimply mixed and Compound: (2.) that which pertaines to it, *quatenus* Animate and living. For in death this vaniſhes together with the life: but in the Carcaſe (untill its univerſall reſolution by putrefaction) the parts, a long time, Conſerve the former.

Though this temper of living man, which reſults from the harmony, and determinate Conſpiracy of all parts, be Hot and Moiſt; and life ſubſiſt in the ſame materiall principles: yet there is framed a great variety of parts: of which the moſt exquiſit in Temper is the skin, eſpecially that of the Hands.

1. In the Claſſis of Hotter parts is firſt ranked the Heart, 2. the Liver, 3. Spleen, 4. Fleſh of the Muſcles, 5. Kidnies, 6. Lunges, 7. Veines, 8. Arteries

8. Arteries, 9. The ſofter oleaginous Fat or Greaſe, 10. The harder Fat or Tallow

2. The colder are, 1. the Bones, 2. Cartilages or Griſtles, 3. Ligaments, 4. Tendons, 5. Nerves, 6. Membranes, 7. Spinall Marrow, 8. Brain.

3. The moiſter are, 1. Fat, 2. Marrow of the Bones, 3. Brain, 4. Spinal Marrow, 5. Teſticles, 6. Duggs, 7. Lunges, 8. Spleen, 9. Kidneies, 10. muſculous Fleſh, 11. Tongue, 12. Heart, 13. Softer Nerves.

4. The dryer are, 1. Bones, 2. Ligaments, 3. Tendons, 4. Membranes, 5. Arteries, 6. Veines, 7. harder Nerves.

This Temper, proper to the body Animate conſiſts of the Calidity, (1.) innate, or primitive, (2.) influxive or advenient. This Calidity ingenerate, ſubſiſts in the *Calidum innatum*. For by the *Calidum innatum*, we underſtand not a bare quality divorced from, but reſident in its ſubject. This increated Heat conſiſts of the implanted ſpirit, and primigenious Moiſture; and is (exactly

Calidum innatum.

Humidum radicale.

actly defined) the radicall moysture exquisitely perfused, dashed, or incorporated with the implantate Spirit, and native warmth. For these three, *viz.* Heat, Spirit, and Originary Balsame, are by so subtile, and firm an Union, married; that they admit no possibility of divorce or Extraction. Which mysterious trine-unity, the amazed Philosopher. *Lib. 2. de Gen. Animal. cap.* 3. calls Σῶμα Ὁώτερον τῶν καλουμένων στοιχείων, καὶ φυσὶς ἀνάλογος, οὖσα τῶν τῶ Ἄτρων στοιχείω.

Spiritus insitus.

This Originary heat, disseminated and diffused, principally in the spermatick parts, called by *Arist.* πρῶτα μόρια: but chiefly radicate and seated in the heart (for the same reason by *Galen* surnamed οὐσίαν τοῦ ἐμφύτου θερμοῦ, *Focum Calidi innati*: Is the grand instrument, whereby the Soul doth enterprise and perform all her actions corporeal, and is the Taper of life, which, while drenched with a wealthy revenue of primitive oyle, diffuseth a vigorous and orient lustre. In the second or consistent age, when there is no con-

contributing unto, but a prodigal waſt of, the unctious, pretious fuel, begins to wane, and yeelds but pale and ſickly flames: in the laſt age, or natural maraſm, for extream poverty, winks out, and an everlaſting midnight ſucceeds.

The influent conſerves, foſters, and invigorats the congenerate heat, by mediation of the ſpirits, which are moſt ſubtle, volatile bodies, materially the moſt refined, meteorized, exalted part of the blood, aſſociated with the Calidum innatum, become the proxim and principal inſtrument in the execution of all actions, and enable the faculties of the Soul to arrive at the ſecond act. *Calor influens.*

That theſe ſpirits are the tie or obligation of the Faculties, and that the Faculties flow from the more into the leſſe noble parts, by the coadjutancy of them, is a Doctrine popular, yet diſcordant to truth. For ſince the faculties are inſeparable proprieties of the Soul; & ſhe is diffuſively equally reſident in every part, we ſhall affront our reaſon,

reaſon, not to infer, that ſhe is every where richly provided of her own efficacious faculties, and receives them not at ſecond hand, or by the indigent way of mutuation.

Spiritus numero tres, viz.

Great is the variety of opinions concerning theſe ſpirits, for one ſect ſubſtracts them to a numberleſſe unity, a ſecond multiplies them to a ſuperfluous plurality: a third (and moſt regular) computes a a trinity, to which opinion, as in neereſt cognation to verity, we adhere. For though the originary material of them all be the ſame, *viz.* the purified and moſt ſublimed part of the blood: yet they admit a divers impreſſion, and diſtinct form, according to the diverſity of parts, wherein they receive elaboration and ſpirituouſneſſe, and are comparated and deſtined to divers and diſtinct uſes: and are only (1.) the Natural, (2.) Vitall, (3.) Animal.

1. *Naturalis*

Concerning the exiſtence of the natural Spirit, many ſuſpend their determination; and we, although we

we admit it into the number of ſpirits, muſt acknowledge no ſmall graduall difference betwixt it and the two other, neither do we concede it charged with the ſame office, that the other bear. Generated it is in the liver, contained in the veines, and is a ſubtle ſpiritual body, produced from the *Aspis* or rarefaction of the blood, and becomes a ſubminiſtred material to the Vital ſpirit.

Which all men concede to be generated in the left ventricle of the heart, from the Natural ſpirit, flowing into the right Ventricle of it, there attenuated and more elaborate; and the aire attracted by inſpiration, and dilatation of the Arteries. This ſpirit is not only in the heart, concurring with the innate heat of the ſame, the principal inſtrument of all its actions, but by the arteries diffuſed into the whole body, cheriſhes, excites, and imprægnates the congenerate heat in every part, whence it derives the appellation of Calidum influens. This alſo is the prime materiall of the Animal ſpirit. The

2. *Vitalis.*

3. *Animalis.*

The partiality of ſome, to magnifie the prerogative, and enlarge the dominion of the Vital, would anihilate the Annimal ſpirit, but ſince there is aſſigned a peculiar royal organ, the Brain, to its preparation and elaboration, and it is inſervient to thoſe noble uſes, which the Vital cannot enterpriſe (for a member, though bountifully perfuſed, and vivified by the vital, yet deſtitute of the influx of the Animal ſpirits, ſuffers aboliſhment of ſence and motion, as in the Apoplexy, Palſey, and ſtupor we cannot but diſcover) we have reaſon to acknowledge not only its exiſtence, but ſoveraignty, and determine it to be the immediate inſtrument of ſenſe and motion, generated of the purer vital ſpirit, tranſlated by the Carotides and neck arteries, firſt into the baſis, then into the ſubſtance of the brain, and of the aire inſpired by the Noſtrills.

Partss Organice

To the organical parts is required their peculiar ſingular conſtitution, which is a fit compoſure and con-

connexion of the homogeneous parts, into one form convenient to the performance of their proper actions. And to this compoſition conſpire (1.) a definit number of the parts component, (2.) a juſt magnitude, (3.) a decent conformation which includes (1.) a comely Figure, or exact proportion (2.) the cavities and ſluces, (3.) a ſuperficies ſmooth or rough, according as the nature of the part requires (4.) the ſituation, (5.) the connexion with other parts.

Thus far our pen has ranged in the blunt declarement of generals; that is, of things common to all parts, and neceſſary to all actions in the body; our Glue of method will henceforward conduct us into ſharper angles, and the preciſe, though brief, enumeration of the particular parts, by which, and in what manner, the particular functions diſcharge their duties.

CHAP.

CHAP. IV.

Of Nutrition.

Facultas Vegetativa.

AND since, by the Law of Nature, it is ordained Guardian paramont of our minority, and obtaines ſituation, as in the loweſt region of our body: ſo alſo at a neerer diſtance to our knowledge, we ſhould invert the method of Life, Anatomy, and Reaſon, not to aſſigne the Van of our ſucceeding lines, to the vegetative faculty

Under this are comprehended the ſubſervient faculties (1.) Nutritive, (2.) Augmentative, (3.) Generative. And firſt concerning Nutrition and Augmentation. Since theſe mutations ariſe from the extraneous acceſſion of Aliment, and that at firſt application, is heterogeneous and alien to our ſubſtance, that it may be elaborated, and ſubdued to a qualification analogous, and an aptitude for aſſimilation, it muſt firſt ſuffer the impreſſions of many concoctions.

And

And this concoction is (1.) private, which is made in every singular part. (2.) Publick, which is ordained for the common use of the whole body, and is chiefly performed in the stomack and spleen. *Concoctio.*

The first digestion therefore is made in the ventricle or stomack, which for this reason is endued with a twofold appetite, (1.) Natural, whereby it is provoked to the acquisition of aliment, sufficient for it selfe. (2. Animal, which excites and stimulates it to the affection and admission of provision, for the supportment of the whole body, and instauration of the threefold substance, which the uncessant activity of our native chymistry devours. *Appetitus.* 1. *Naturalis.* 2. *Animalis.*

For when man, to lenifie the sharp vellication, and silence the convulsive importunity of hunger, receives in food; the first preparation or alteration of it is made in the mouth, for there it undergoes manducation, fraction, or contrition by the teeth, which for this reason (though they concur to *Manducatio.*

the

the formation of ſpeech alſo) are given to man, to the number (in moſt practical conſtitutions) of thirty two, in each jaw ſixteen, ſome whereof are called inciſores, Cutters, others canini, dogs teeth, and the remnant Molares, grinders; the cutters or fore-teeth, are foure in each jaw, the Canine, two, the grinders ten: Moreover the meat is altered by the permiſtion of the ſalivous humidity contained in, and by the heat of the mouth; and being thus bruiſed and maſticated, it is immediately by the auxiliary motion of the tongue, detruded by the then gaping throat, into the ſtomach: This thus prepared, the ſtomach by the miniſterial Contraction of oblique Fibers, welcomes with cloſe embracement and coarctation, and firmly retains, until by its concoctive faculty and proper heat, it be transformed into a maſſe, or conſiſtence, not much unlike the cream of a decoction of blanched barly, which is called the Chylus.

Dentes.

Deglutio.

Chylificatio.

The Chylus thus exquiſitely Cooked,

Crooked, is by the Pylorus Janitor, or inferior orifice of the ſtomach, diſcharged into the inteſtines or guts, and by their immutative action, attaines one degree more of elaboration and fermentation. The inteſtins are double or rather of two ſorts, (1.) Thin, which are three, *viz.* 1. *Duodenum dodekadaktylon*, or gut, of twelve fingers length, (though in the minorated & dwarfiſh race of man in our ſicklyage, it be found far ſhort of that meaſure) then *Jejunum*, or empty; thirdly, the *Ileon*, or circumgyrated gut. (2.) Craſs or thick, which are three alſo; Firſt, the *Cæcum*, or blind; Secondly, the *Colon*, or Collick; Thirdly, the *Rectum*, or ſtraight gut. *Inteſtina.*

But ſince no meat, though the pureſt, can be all converted into aliment, but yeelds ſome dregs and excrementitious reſidence, altogether uſeleſſe to the nouriſhment of the body: Choice nature like a ſubtle Chymiſt, in this firſt, as in both the other concoctions, extracts the benign and wholeſome *Excrementa primæ Coctionis*

parts, but rejects the unprofitable and fæculent: *viz.* the thinner and lixivious by urine, the grosser and terren by stool.

Exclusio Fæcum alvi.

The exclusion of the fæces is done, partly by the intestines, in their superiour parts, contracting and coangustating themselves by the circular and transverse Fibres wherewith both their inward and outward coats are furnished; and partly by the mutual aid of the Muscles of the Abdomen, by which the belly is compressed.

Vrina materia.

The thinner aquosity, or tartareous lixivium, is not presently excerned, but incorporated with the Chylus, becomes the vehicle to it, whereby thinned and diluted, it may with the more ease, and less danger of obstruction, permeate, or glide through the narrow veines of the mesentery and liver.

Concoctio.

The first concoction thus absolved or finished, the Chylus is by the vermicular exuction of the lacteous, or milky slender veines, which in infinite number are with open orifices inserted into the intestins

teſtines, attracted, prediſpoſed to ſanguification, and (per Anaſtomoſes) by diſtribution, convey'd to the Liver.

But that the milky liquor may arrive at the Liver, the more pure & defecated, in its journey thither, the Craſs and fæculent part, together with the lixiviated ſeroſity, is extracted by, and by the ſplenic branch, derived into the ſpleen, which converts it (that is, ſo much of it as the ſpleens Hæmatopoietick power can conquer, and the refractory matter ſubmit unto) into blood for the maintenance of it ſelf, and the other vulgar parts in the lower region. And thus the ſpleen doth not only drein and purifie, but is alſo enriched with the faculty of ſanguification, and doth generate blood, though courſer and more fixible then that of the Liver: But the remainder which is wholy excrementitious and unconvertible, is ſecluded, partly into the Hœmorrhoid veines, partly into the trunc of the Port vein, and partly by the ſplenetick arteries. *Lienis Vſus.*

The Chylus, by the officiall ſe-

Sanguificatio.

lection of the ſpleen, thus clarified is delivered up to the Liver, and by the tranſubſtantiating Hæmatopoiesy thereof, perfectly metamorphoſed into blood, which from thence by the aſcendent, and deſcendent trunc of the hollow veine, and its capillary diſſeminations, is by univerſal diſtribution communicated to all parts of the body.

Bilis Flava.

But as in every concoction, ſo in this of ſanguification, there redound two invincible ſuperfluities, (1.) Choler, or the fiery excrement, which is collected into thee χόλης χολήδοχες bilious receptacle, or gall, and (after a convenient intervall of time) from thence, through the cholerick chanell, excerned into the duodenum gut, becomes the bodies natural glyſter, and by its acrimony, extimulates the bowels to the excluſion of ordure. (2.) The ſalt whey, or lixiviated ſeroſitie, which is through the emulgent veines, ſucked in by the Kidneys, in them percolated, and from them diſcharged through the Vreters, into the Urinary receptacle, or blad-

bladder; and then called Vrine. For the Urine is nothing else, but the Aquosity or serous Humidity of the Chyle, impregnated or satisfied with the superabundant and indigestible salt of our diet. And this is familiar to vulgar disquisition, not onely from the affections and symptomes occasioned by it; but from the large quantity of salt drawn of Urine, when the aqueous humidity is Evaporated. *Serum.* *Urina.*

The blood, which for the generall sustenance thereof, is distributed into the whole body; although contained under, and managed by one single form; yet disparted is Heterogeneous, and the more benigne and temperate division of it is blood properly and distinctly so called; the igneous or hot and dry is called Choler; the Aqueous or cold and moist is called phlegme; the Terrene or cold and dry is called Melancholy. And of all these, there is no part Excrementitious or unalimentary; but (while under the wholsome Government and Soveraign Lawes of Eucrasie) is *Sanguis.* 1. *Temperatus.* 2. *Biliosus.* 3. *Melancholicus.* 4. *Pituitosus.*

wholy digestible and nutritive.

Circulatio sanguinis. de qua vid. Epist. Walei ad Thom. Bartholin. & Lib. doctissimi nostr: Anatomici Guliel. Harveij Angli.

This Blood or Soveraign Nectar, being Circulated, a voyage or two, through the numerous, slender meanders, and Capillary divarications of the Veines and Arteries, is wafted to each individuall part: according to the Crasis of each distinct part, admits a peculiar distinct impression: and is at length transubstantiated and assimilated.

Humores Secundarij.

But since in this Elaboration, the blood undergoes successive transformations; Philosophy conceds the Generation of four secundary Humors succeeding each other in existence: and that the blood by these four mutations doth gradually ascend to Assimilation. The first of these Humors is called (assuredly the first Imponent had no very large nomenclature, since he was driven to assign it this name) *Anonymos*, Nameless, the second is called *Ros*, the Dew, the third *Gluten*, or the viscid & glutinous, the fourth *Cambium*, because it exchanges its own nature for that of the part to which it is applyed.

1. *Innominatus.*

2. *Ros.*

3. *Gluten.*

4. *Cambium.*

And

And in this laſt, and moſt exquiſite Concoction alſo, there remaines a pleonaſmus, or redundancy of excrements, the one whereof are thoſe ſtrigments and ſordid adhæſions to the skin: the other is that watery ſerous matter, which is partly diſcuſſed, *per*, "Αδηλον ἀναθυμίασιν by inviſible tranſpiration, and partly excluded by ſweat. And for the Convenient Evacuation of theſe Excrements the skin was conſtituted porous and tranſpirable. *Strigmenta.* *Sudor.*

Chap. V.

Of Generation.

AND God ſaw every thing that he had made, and behold it was very good. This is the reaſon why the Creature ſo abhors diſſolution, and endeavours to perpetuate its Verity, that is, conformity to the primitive idea in the ſupreme intellect. For ſo much better is it to be, though in the miſerable Condition of ſomething, then in the horrid *Generatio.*

horrid obscurity of nothing; that (if some guesse aright) the Devill, though he might evade his torments, would not consent to his own annihilation.

But since this desire of eternity can, in sublunary Animals, be satisfied onely in part (for individualls must perish upon their own principle, and the same flames which kindled them to life must become their funerall Taper, and light them back to elements) Nature hath contrived a way to immortality, by the succession of the species propagated by Generation. And by this way man (whose ingredients confesse his mortality, not onely since, but before his Fall) relieves himself from totall regression into the oblivion of his first Chaos, and becomes superior to the tyranny of Corruption, by the immortality his issue.

Semen principium Generationis quid?

Now this Generation or act of the Vegetative Faculty is performed by the seminality of Male and Female, inheriting fertility from the fruitfull

full benediction of the Creator, *in Crescite & multiplicamini*. And this Generative materiall as made of the purest part of the blood and finest spirits both Vitall and Animall, flowing by the veines, Atteries and Nerves, into the Testicles; whereby their Spermatopoietick power it is converted into a white, spumous, spirituous substance, containing the perfect Idea of each individuall part.

Sennertus Lib. Inst. 1. c. 10. Qui semen femininum prolificum esse, vimque agendi in se continere existimant, ij mihi probabiliorem defendere sententiam videntur. Et non solùm eo nituntur quod semen femininum à similibus organis generetur, atque in venere cum eadem oblectatione excernatur. &c.

Nos statuimus utrumque sexum suum ad Generationem conferre βύμελον, & neutrius sexus semen seorsim sumptum, sed utriusque conjunctum, & in utero Fœminæ ritè unitum, esse semen prolificum & facundum. &c. Plato.

This prolific Contribution *Aristotle* will not allow the Fœmale sex; but conceives their parts onely recipient for the masculine injections: but if wee consult our reason and our sence wee cannot but attest the contrary. For Femalls have instruments officiall both to spermification and Emission; are invited to, and

and act Congreſſion with the ſame libidinous orgaſmus, and pleaſant fury, that the Males do: and their Seminary Emiſſions have been diſcovered to the ocular ſcrutiny of many. Neither do Male and Female differ in *ſpecie*, but *ſexu*.

Yet the ſingle ſeed of either ſex is not ſufficient to procreation; but ſuch is the inſtitution of the Creator, that from the united Seminalties of Male and Female, as from two partiall Cauſes mutually contributing their Efficiencies, one principle and third totall Cauſe ſhould reſult: from which one motion or mutation, though diſtinctly regulated, ſhould advance to the production of the infant. For the efficiency of the maſculine injection carries the greater ſtroak in Conformation, and is more virtuall then the Feminine.

Conceptio. The prolifick Ejaculations of both ſexes received into the womb, are, by the proper innate productive faculty thereof conſerved, and cheriſhed; and the plaſtick Conformator, which lay concealed in the

ſeed,

ſeed is called forth, excited, and impregnated, and begins the delineation or organization of the Infant. The parts firſt formed are the two membranes, in which the more divine and ſpiritual parts of the ſeed are inwrapped, that enſhroud the Infant; one whereof is called the Amnios, or Lawn ſhirt, that immediately inveſts the Infant: the other Chorion, or the girdle, which enrolls it, and is the ſupportment of the Umbelick veſſels, and the cauſe of its adhæſion to the Cotyledones, or cakes of the womb; which two involutions conjoyned, make the ſecundine or after-birth.

Ordo Formationis.

Membrana Fœtus.

The feminine prolification thus expanſed into filmy integuments, and the new kindled Diety enſpheared; the ſpermatick parts obtain ſeniority of conformation, and are ſpun out into a numberleſſe number of fine ſlender filaments, which are the *ſtamina*, or groundwork of the ſolid parts, and (by a Texture farre too fine and cunning for the fingers of *Arachne*) woven into three bullous orbs or conglobations. Their

Partes ſpermaticæ delineantur.

Sanguis maternus.

Their delineation thus dispatched, the parts, by the nutritive apposition of the other fertile principle, the maternal blood, advance to increment and majoration. And for this purpose, the wise contriver of both worlds hath ordained, from the fourteen to the forty-fifth year of life, in eucratical bodies, a natural Plethora, and provident exuberancy of blood, in teeming and ingravidated women, to become the Infants sustentation: or in vacancy of prægnation, lest it overcharge and prove offensive, to be by periodick monthly conflux transmitted to the womb, and thence excluded.

Menstruorum causa finalis.

Vasa umbilicalia.
1. *Vena umbilicalis.*
2. *Arteriæ duæ.*
3. *Vrachus.*

The infant having from the mother received the rudiments of the sanguineous parts, the conformator frames a vein, two arteries, and the urachus, convening about the navill, and wreaths them into one contorted umbilicality, or quadripartit Navill string: the vein being a surcle of the Port vein, and inserted into the fissure of the Liver, is the Nurse provided to suckle

the

the Infant. The arteries are two twinn branches of the Iliacall descendent Arteries, and the conduits by which the best portion of the arteriall blood and spirits is derived to the Heart of the new production: The Uracus is a derivation from the Bladder to the Navill. After parturition, the use of all these ceasing, they are by coalition and exiccation degenerated into Ligaments.

The age (or more truly the nonage) of the Infant in the womb is distinguished into the time (1.) of Formation, which extends from the Conception to the Calcitration, or quickening; and (2.) of Exornation or perfection, which is computed from the motion, to parturition. Others otherwise divide it into the time (1.) of formation, which in the account of *Hippocrates* lasts to the thirtieth day in Masculine, and to the fortieth in Feminine Conceptions. (2.) Of motion, which the vulgarity of Physicians concede to be in the third month in males, in the fourth in fe-

Tempus formationis.

Tempus calcitrationis.

females. (3.) of parturition, which is so various, that whosoever can definitively calculate *nobis erit Magnus Apollo*. The wise ignorance of *Hippocrates* confirms the incertitude thus, *Lib. de Alimento ad conformationem. Soles triginta quinq; : ad motionem septuaginta, ad perfectionem ducenti decem. Alii tradunt ad formam 45, ad motionem. 76. ad exitum 20. requiri. Alii ad speciem 50. ad primum saltum 100. ad perfectionem 30. Ad distinctionem 40. ad transitionem 80. ad elapsum 240. &c.* But our experience establisheth, above the possibility of eviction, that no conception, which hath an immature exit before the expiration of 6 months partaks vitality. That the aborted issue of the seventh month usually lives, and may (if virile and vigorous) be cherished to maturity; that Octomestral births are ever fatal, if the Doctrine of *Hippocrates*

Hippocr. περὶ Σαρχῶν puer septimo mense natus, certa ratione prodiit & vitalis est, cum is rationem & numerum exactè ad hebdomadas respondentem habet. Octavo autem mense natus nunquam vixit. Novem mensium & dierum fœtus editur & vitalis est: numerumque ad hebdomadas exactè respondentem habet. Quatuor nempe decades hebdomadarum, dies sunt ducenti & octoginta.

hold

hold good: but that moſt legiti-
mate, happy, and frequent time of *Tempus partus.*
Parturition, is the ninth month,
and that the enixation, or delivery,
uſuall fals out between the fifteenth
day of the ninth month, and the
fteenth of the tenth of the geſta-
ion.

But although in the obſervations
of Phyſicians, there ſtand recorded
divers undecimeſtrall, duodeci-
meſtral, and elder editions: yet ſuch
overſhoot mediocrity; and are to be
filed in the legend of rarities, and
portive miracles of nature.

Though the months, by which
we compute the Geſtation, are lo-
ary; yet from theſe, the lunary con-
unctions of twenty nine daies, and
welve howers, are not in the main
much diſcrepant: neither is this la-
borious artifice confined to any
certain minute, puncilios of time:
for as the magnality of human re-
emination is withdrawn from our
comprehenſion; ſo is the indefinity
of its time the diſcouragment of
our determination.

CHAP.

CHAP. VI.

Of the Vital faculty.

Facultatum ordo et dignitas.

De facultatum concentu, et principatus ordine, videatur Fernelius, lib. 5. de Animæ Facultatibus. Cap. 17.

THe human Soul, though still an absolute Monarch, divides her Empire into a triarchy, and governs by the dispensation of a Triumvirate. The three Viceroyes though they are absolutely distinct by their commissions, and keep their courts in severall Regions, are by so indissoluble a leaguean sympathetick allyance united, that the prosperity of one enlarges the principalities of the other, and the detriment of each, threatens the integrity of all. The natural or vegetative Faculty, claimes superiority in order of procreation, as being governour of our minority, and commanding the first tertio of our life: the vital merits preheminence in order of necessity, as transmitting soveraign, and conservatory influence, without which, the other must, in the fleetest article of time be deposed for ever. The Anima-

chal-

challenges supremacy in order of excellency, as regulating the diviner actions, sence and motion, to which, as to their perfection, the two former are destined. Thus every one of these rulers is supream, and yet they are all equal.

The vital faculty, by proper actions, and peculiar Organs, absolutely distinct from the natural & animal, is seated in its own royal Throne, the heart. The 3 *Vitalium*, Thumetick powers resident in the Heart, all comprehended under the name vital, are first the faculty Generative of the arterial blood and spirits, (2.) of the vital conservatory Heat. (3.) the Pulsifick or motive official to the former. *Facultas Vitalis*

From the Iracible faculty stream all the Pathemata, affections, or passions of the mind, Anger, Manfuetude, Audacity, Fear, Hope, Despair, Dejection, or Prostration of the spirit, Joy, Sorrow, and others of the same Classis, that are either compounded of, or dependent on the former. Of these passions, some are performed *materialiter, seu per modum* *Fac. Irascibilis.* *Animi Pathemata.*

causæ efficientis, by expansion, or excentrick motion of the vital Heat, Blood, and Spirits; of this order are Anger, Joy, &c. others by concentration of the same, as Fear, Sorrow, &c. but formaliter, all are nothing, but the motions of the Appetite, either in prosecution of the delectable and friendly, or flight and retreat, from the odious and offensive object, of which the former causeth an expansion, or circumferentiall salley, the latter a retraction or concentrick retreat of the vital blood and spirits: But these appetitions, or irascible and concupiscible motions cannot be executed, but the agitation of the Heart, Arteries, and fervent spirituous blood. From this we receive satisfaction, why the *Facultas θυμικὴ*, of necessity hath its residence assigned in a part of the hottest temperature, and endued with the power of perpetuall agitation.

Cordis Situs. The situation of the heart is (though vulgarly deluded by the sensation of its pulse, and the sinister declination of its mucro, or cone

cone, oppinion it to be placed in the left side) in the center of the body, if in our measure we except the thighes and legs; and its Basis or Center, fixed in the middle of the Thorax, or middle region of the body, that from it as from a plentiful fountain, the vital Heat and spirits may be promptly diffused into the whole body.

Ventriculi. The ventricles, cavities or closets of the heart, are two, the right and left, the right does by Diastole or dilatation, suck in blood from the gapeing ostiary, or floud-gate of the ascendent hollow vein, by its intenser fire, cohobate, refine, and rarify it; the more subtile and meteorized part whereof, is, through the Foramina, or capillary perforations of the septum, interstitiary skreen (which notwithstanding *Columbus*, *Spigelius*, *Hoffmannus*, and our *Hippocrates*, Doctor *Harvie* will by no means admit of) or partition wall betwixt both ventricles, transcolated into the left ventricle; the other parcel passeth by the *Vena Arteriosa* into the lungs; and one small

Septum interstitium.

portion of it converts into the Aliment of the Lungs, the remainder is transported by the *Arteria Venosa*, into the left Chamber of the heart.

Cardis motus. These businesses (which we are sorry to confesse more the imployment of our wonder, then our knowledge) are transacted by a certain admirable and uncessant motion of the Heart; whereby, in

1. *Diastole.* the diastole, the extremities of it are contracted, and the mucro or point ravelled up towards the Basis, so that the Heart in longitude abbreviated, and in latitude expansed: but in the Systole or Compression, it is by coangustation of the sides

2. *Systole.* enlarged in longitude, and diminished in latitude.

But since to the regeneration of vitall spirits and Arteriall blood are required two necessary ingredients, Venal blood, and the Aer: and these two materiall principles cannot, by one and the same motion, bee attracted: besides these two Ventricles recipient and elaboratory, there are superadded two notable

ble Cavities, (Christned by Anatomists *Auriculæ proæsses* or superstructions) on each side one; extending to the superior part of the Ventricles: The uses whereof are (1.) to inspire Aer for the refocillation or recreation of the vitall spirits, and to be the Hearts promptuaries or storehouses to receive the blood and Aer that they may not Ἀθρόως, with too sudden an impetuosity rush into the heart and cause suffocation: (2.) to fortifie and guard the *Vena Arteriosa, & Arteria Venosa*, to which they are adjoyned: (3.) according to the doctrine of *Hippocrates, Lib. de Corde*, to serve the heart in stead of a Fan or Refrigeratory; for they are therefore distended because impleted; whereas the Heart, by a motion quite contrary to this, is therefore impleted because distended. *Cordis Auricula.*

That the Heart in its Contraction and Expansion might be guarded from impediments, Nature hath constituted it a capacious, membranous, domicilium or Tent, called the Pericardium or Purse of the heart; the use whereof is (1.) to de- *Pericardium.*

fend the heart in its motion from the shocks of the circumjacent parts (2.) to contain the ſerous Humor, wherein as in *Balnea*, the heart is refrigerated, moyſtned, and its motion facilitated.

Vaſa. Moreover, ſince nothing can have ingreſſe to, and regreſſe from the heart, but through Conduits and Sluces: there are for this purpoſe ordained four conſpicuous veſſells in the Baſis of it, two in the right, and two in the left ventricle of the heart: in the right are the *vena Cava & vena arteriosa*: in the left, *Arteria magna & Arteria Venoſa.* (1.) The hollow veine with an ample and patent orifice looks into the right ſinus of the heart, and into it drops blood for the generation of Arterial blood, the vitall ſpirits, and proviſion for the Lungs. Others, notwithſtanding, opinion that the blood rediſtilled and elaborated in this preparatorie, is immediately diſtributed through the whole body. (2.) the *vena Arterialis* is the derivatory of blood from the right ventricle of the heart, to the Lungs, for

1. *Vena Cava.*

2. *Vena arterialis.*

for their nutrition; and the principall materiall of the vitall ſpirit and blood: (3.) The *Arteria Venoſa* conducts the Aer extrinſecally adveni-ent and prepared in the Lungs, and the blood by the *Vena Arterioſa* effuſed from the right, into the left ventricle; and expells the fuliginous Exhalations, and at the ſame inſtant conveies a parcel of the vital ſpirits into the Lungs: (4.) The Aorta or grand Arterie diſpenſeth the vitall ſpirits, and Arteriall blood, after their Exaltation in the left ventricle, into the whole body. Theſe four Sanguiducts, *Hippocr. Lib. de Corde* calls πήγας φύσιος ἀνθρώπου, καὶ ποταμοὺς &c. the Fountaines of Humane Nature and fructifying rivulets wherewith the purple Iland is irrigated.

Arteria venalis.

4. Aorta.

But ſince each of theſe four Conſiderable veſſels is ordained to a double uſe: *Ex. Gr.* the *Arteria Venoſa* doth not onely ſuck in Aër from the Lungs, and inſpire it into the left Ventricle of the Heart; but alſo returns up the vitall ſpirit; and Arterial blood to the Lunges, and bel-

Valvulæ.

cheir out the ſmoaky Exhalation, that the ſubſtances admitted into the Heart, may not rebound back by the ſame way they entered, before they have attained full trãſmutation, and intended perfection; or what is effuſed from the Heart may not remeate into it again, the omniſcient Contriver hath annexed eleven Valves or Flood-gates to the orifices of theſe veſſels, two to the *Arteria Venoſa*, and three apiece to the other three.

To the *Vena Cava* are ſigned three called τριγλωχῖνες, tricuſpides, three pointed Values, that look inwards, that the blood may have intration into the right Ventricle, but no regreſſion into the hollow veine: (a) Contrarily, thoſe of the *Vena Arteriоſa*, named, from their figure, Sigmoides, Semi-Cynthian Values, ſhut inwardly, but open outwardly, that the blood may have Eructation, but be denied readmiſſion: (b) the two Janitors allowed to the *Arteria Venoſa*, being conjoined repreſent an Epiſcopall Mitre, open outwardly, and ſhut inwardly, and for-

bid

bid the reflux of the emitted vitall spirit; and fuliginous expiration: (4.) Those affixed to the Grand Arteries, are three semicircular or halfmooned, look outwardly, and occlude inwardly, that the Arteriall blood and vitall spirit powred out for the vivifying supportment of the whole, may not remeat into the left Ventricle.

The *Ductus*, Pipes, or Conduits, through which the heart transmits vitall heat, spirits and blood to the whole body, are branches of the Aorta which are also dilated and contracted, and by this motion draw in the Ambient Aer through the spiramina or slender evaporatories of the skin, and distribute the vitall spirits, and arteriall blood; which motion of the heart and Arteries is called the Pulse. *Arteriæ.* *Pulsus quid?*

Which consists of two Contrary motions, a Diastole or dilatation, & a Systole or Coangustation, after a momentary respite or articulate interval of time, mutually succeeding each other. (1.) in the Diastole the *Arteriarum.* 1. *Diastole.*

the heart is impleted with Aer and Blood; drawn in from the Lunges by the *Arteria Venosa*: and the Arteries through their subcutaneous orifices attract a convenient quantity of the environing Aer. (2.) in the Systole the heart; by the great Arterie; delivers out vitall heate, and Arteriall blood, invigorated with vitall spirits, for the Conservation of all, and by the *Arteria Venosa* discharges the smoky effumations, and the Arteries by their small ostiaries squeeze out their vaporous superfluities; which action is termed ἄδηλος διαπνοὴ, insensible Transpiration.

2. *Systole.*

Pulmones. Again, in the regard the inspired Aer must part with its intense frigidity, be refracted and suffer some graduall mutation, before it penetrate to the heart; the prudent Conformator hath instituted Respiration, provided πνεύμονας Respirators, Lungs, as the præipuous Organs thereof. For although the Thorax and other neighbouring parts may be allowed causes *sine qua non*, and contribut their inserviency to respi-

ra-

ration, *modo secundario*: yet primarily, as from its Causator this motion flowes from the Lungs; to which, as well as to the heart and brain, by the inviolable Charter of Nature, is granted a peculiar innate power to dilate and contract themselves: * which in living Anatomies, and vulnerary perforations of the Thorax, may with easie animadversion be confirmed. For neither is Respiration a motion arbitrary or dependent on the injunctiõ of our will; nor are the Lungs dilated *ob fugam vacui* (which would accuse Nature of the want of forecast, and shifting into one absurdity, to avoid another) when the Thorax is distended: but they are moved by their owne inherent virtue respiratory, and the Lunges and Thorax are therefore in one, and the same instant moved, because they conspire to one and the same end: But that this might be with the greater convenience performed; and the Lungs have a room accommodate to their motion: the Animall Faculty, at the same instant moves the Thorax.

* *Et si meritò concedamus hanc, de Pulmonum & thoracis motu, litem nostro arbitrio discerni non posse: tamen motum Pulmonum, ab insita iis facultate, non thoracis motum sequi, proficisci, & veritati maximè consentaneum videtur, & peritissimorum Anatomicorum observationibus ac rationibus confirmatur.*

These

These two motions keep time together, and observe so even a proportion in Expansion & Coarction, that some have thence hinted the error, that they are regulated by one and the same faculty: Neither are the lungs distended, because repleted, as a bladder by the inflation of Aer, but, since there is no inflatorie instrument, that should from without puffe Aer into them, are therefore repleted, because dilated, as in a bellous, the cause of its repletion is dilation.

This Action, Respiration, is compounded of two contrary successive motions: viz. Inspiration, and Expiration, and a short quies intervening. (1.) In inspiration, the Lungs and Thorax being dilated, the Aer, by the mouth and nostrils is drawne in for the fanning and refrigeration of the heart, and generation of the vital spirits. (2.) In Expiration, the Lungs and Thorax being compressed, the Fuliginous Excrements (which in winter, when the intense frigidity of the surrounding aire condenses them, are visible)

1. *Inspiratio.*

2. *Expiratio.*

ble) are by the mouth and noſtrils excluded. And for this reaſon, that both a plentiful proportion of Aer may be ſucked by, and contained in them: the Lungs in magnitude proportionably, exceed any other of the Viſcera, and have obtained a porous, ſpongy ſubſtance. *Excrementa Fuliginoſa.*

The Fiſtula or Cane that conveys the inſpired Aer from the mouth and noſtrils into the lungs, is the *Aſpera Arteria*, or *Trachea*, with our Nation, the Weazon, or Wind-pipe, whoſe ſuperiour part, from the Larynx to the Bronchi, is one ſingle trunc; but the inferior is devaricated into innumerable ſmaller branches or diſſeminations (by *Hippocrates* furnamed *Syringæ*) and diſtributed into all quarters of the lungs for their total impletion with Aer, which the veſſels extended from the heart, receive and defer into the ventricles of it. *Aſpera Arteria.* *Ejus.* *Bronchi.*

And ſince we cannot, the ſhorteſt account of time, ſurvive the defect of Aer, both to ventilate and allay the fervour of our cordial fire, which would elſe intend to conflagration

Conformationis ratio.

gration, and terrify our heart to Cynders, and to recruit our vitall spirits, so prodigally exhausted. This *Aspera Arteria* is contrived of many round, annular (or rather sigmoidall) Cartilages, connexed by intermediate ligaments, that by this structure, it might be alwaies kept open, and we secured from strangulation, which immediately succeeds its concision.

But that our deglutition might not prove our destruction, and no part of our meat, and no more of our drink, then may only be termed a guttulous irrigation, might drop down into the Trachea, or rough arterie, to the hazard of suffocations providence hath in the upper part of it, framed the Epiglottis, which is a soft Cartilagineous flap, in figure representing a tongue, or (if we applaud the fancy of *Hippocrates*) an Ivy leafe, and when we swallow down our meat, shuts the chink of the *Aspera Arteria*: For every morsel that descends this forbidden

Epiglottis.

Καὶ διὰ τόδε οὐ χωρέει, τὸ πότον ἐς τ' πλεύμονα, ἀλλ' ἐς τὴν κοιλίην, ὅτι προσαφὴς ἄντω ἐστὶν ὁ στόμαχος ἀνθρώπου ἀεὶ χαεκῶν καὶ χωρέει ἐς ἐκεῖνον καὶ ἅμα ἐπικεῖται τῇ εὐριγγι τοῦ πλεώμενος ὥσπερ κισσοῦ φύλλον. *Hippocrat. de Morb. Lib. 4 circa finem.*

way

way, hath a dangerous haughtgust of *Anacreons* grape, and denounceth the same harsh fate. Had we said crosse fate, the Epithite had been more genuine, and would have cleerly hinted the inversion and prepostrous rarity; for how unusuall and perverted an accident was it, for the invincible stupiditie of a Poet to flow from his inspiration, & a volatile Muse, to be condensed into eternal dulnesse by the sprightly fruit of the Vine; the same inspirer, whose active flames had so often warm'd and exalted her to the sublimity of rapture.

Moreover, since the Thorax, or Chest, is, partly the Munimentum or Fortresse erected for defence and safeguard of the vital parts, and partly an instrument to respiration; it must not have been built totally *Carneous*; for flesh were too soft a materiall to resist the assaults of external injuries, nor totally osseous, for bones would admit no such flexure as is required to respiration; wherefore it is composed of twelve pair of Ribs, or arcular bones, *Therax.*

bones, to which, that they might be bent and relaxed, in dilatation and constriction, there are adjoyned sixty five Muscles, whereof thirty two distend, and as many contract the Thorax.

Diaphragma. But because no ribs could, without perverting the rules of Convenience, be planted in the lower part of the Thorax: that in this Region, there might not want an Organ fit, both for distention and Contraction, and also to divide the Vitall from the Naturall parts, there is a partition wall, or musculous and carneous interstitiary, wherefore called διαφραγμα drawn transversly betwixt this and the lower region, which in Expiration is elevated, and in inspiration is depressed. And because the Gullet, Grand Artery, and Hollow Veine, which in several transforations passe through the midriff, close to the Spine, may not, by the perpetuall motion thereof suffer constriction and agitation the Centre of it is membranous & nervous, but the periphery or circumference Carneous; that so this

part

may be lesse subject to Contraction, when the other perpetually ascends and descends.

Chap. VII.

Of the Sensitive Faculty.

Conducted by the Constant manuduction of Nature, and ascending by the same progressionall degrees, by which she advances to the Glory and Crown of her Endeavours, Perfection; we are mounted to the supreme Orb of our Microcosme: wherein, as their proper Sphear, the Rationall, and sensitive Faculties exercise their Semi-divinity: and from whence, by their almost immaterial Agents, the Animal Spirits, they transmit their more then Elementary activity. And herein, since the first part of our Lecture looked, though by a pale and faint reflexion of its actions, and through the Chaos of obscure brevity, on the Rationall Faculty: we conceive it our duty to addresse our

future speculations onely to the Sensitive; and observe how that governs and actuates the members of the body to the designes of Sense and Motion.

The two Fountains from which, as from their primitive Originals, all the operations of the sensitive faculty stream, are (1.) the power apprehensive, (2.) Appetitive or Motive.

1. Vis Apprehensiva

The Apprehensive is that power, whereby we discern and distinguish of Objects present and absent. Under this are comprehended all the Senses, (1.) Externall, *viz.* (1.) the Sight (2.) Hearing, (3.) Tasting, (4.) Smelling, (5.) Feeling: (2.) Internal, *viz.* (1.) Common Sense (2.) Imagination or Phantasy, (3.) Memory.

Externi Sensus

The Externall Senses residing in the Circumference of the body discern and censure Externall objects endued with sensibility, by their own act, without information from any other Faculty preceding.

And since Sension is no simple action either of the Soul, or of the body,

body, singly and disjunctively considered; but resulting from the conjunctive efficiencies and concurrence of both: to the just performance of it are required (1.) a sensitive Soul (2.) an Organ or instrument, (3.) an Object, (4.) a Medium.

The first and chief requisite is *Anima*, the Faculty sensient, or Effectrix: for this is ἐντελέχεια *per quam Corpus Animatum sensibile extra se positum percipit, & Δυνάμει Αἰσθητικὸν actu tale reddit*; the power by which the Animate body perceives the sensible, Externall Object, and preferrs it from the imperfection of sensibility in capacity, to the perfection of sensibility in act. For no sooner doth this Efficient or Causality take leave of her Concomitant the body: but the body compulsively retires back into the insensibility of its cold materialls, and can be reactuated by the information of no Power, second to that, whose look can speak the Rocks into Animation. 1. *Anima sensitiva.*

The secondary Causator necessary, is the Organ or Sensorium; for although in regard of Essence, the 2. *Organum.*

Soul be equally omnipresent in every atomicall particle of the body: yet is it no where the Author of sense, but where it meets with the provision of an Organ. Again, although the essence of the soul be the same in the Foot, that is in the eye or ear: yet because in the Foot it is destitute of an instrument, it neither sees nor hears. The instruments of sense (that we may interpret the thoughts of *Jul. Cæsar Scalig. Exercit.* 297. Sect 3.) are (1.) the Spirits whose nature holds a large correspondency and near affinity to the Faculty it self: (2.) the members, which are constituted in some similitude and Cognation to the objects: For the Spirits are subtle, invisible, and so exalted substances, that we may (by the favour of comparison) account them immateriall. Yet on these as on their proper recipient the ideas of sensible objects are impressed; and the instrumental members are but the Conductors and Vehicles of them towards the Objects. The members, although they are made up of many severall parts so ne-

neceſſary, that the defect or vitioſity of the meaneſt, induceth aboliſhment, or depravation on all; yet is their one part above the reſt advanced to the prærogative of being the precipuous and approximate inſtrument of Senſion, and there is in the particular Organ of every ſenſe, one determinate ſimilar part, in which the form of the determinate object is expreſſed: * and therefore is the Senſorium, if no way digreſſing from the integrity of conſtitution, confined within the circle of Analogy, and prærequiſite proportion to its proper object, that according to the peculiar nature of the object, it may ſuffer a peculiar and identical alteration, and entertain the impreſſion of the peculiar Idea, which, by intentional effluviums, or aporrhoias ſtreams from the object.

* *Ariſt. Lib. 2. de Part. An. cap. 1.* ἡ αἴσθησις συνεγγίνεται πᾶσιν ἐν τοῖς ὁμοιομερέσι, διὰ τῶν αἰσθητηρίων ὁποιαοῦν ἔνος εἶναι γένος ἢ τὸ αἰσθητήριον ἐνόντος, δεκτικὸν εἶναι τῶν αἰσθητῶν, &c.

The third conſpirator is τὸ Αἰσθητὸν, the ſenſible object, or more ſtrictly, ſenſible diffuſive qualities; for although in a randome acception, it be no impropriety to call the objects ſingular and corporeal ſubſtances, yet they ſtrike not the ſenſe, 3. *Objectum.*

quatenus substances, but as they are endued with sensible qualities, and contain in them the formality of sensibility. But since to every action is required corporeal contaction, and the object is very often at a large distance beyond the line of contiguity, removed from the sensorium: it is no idle quærie, by what manner, and by what medium, the object doth, beyond it selfe, invade the Organ? Our solution shall be the sober resolution of most heads of Mediocrity, that it is done by certain emanations and invisible raies, carrying with them the qualities, simulachra, or representations of the sensible objects, from which they are emitted. For sensible objects are not restrained only to the poverty and course operations of reall and materiall, but are enriched with the finer endowments of spiritual and intentional qualities: which are nothing, but the purer images of themselves, by subtle radiation, and tenuous continued effluviums flowing from themselves; and that there are such spiri-

ſpiritual effluxions we cannot deny, unleſs we make invalid the chief inducement of belief, our experiences for in ſummer, when to contemperate the æſtuation of the Suns perpendicular embraces, we ſecure our ſelves in the gentle refrigerium and ſolace of the Groves (the beſt & moſt natural Vmbradoes) & recreate us by accubation, under verdant Arbors, if we wil but take the pains to obſerve it, we ſhal ſee our garments apparently infected with the green tincture of the ſupereminent leaves; and if we place a white linnen cloth, or fine white paper, collateral to a Venice-glaſſe, filled with Claret-wine, it will, in apparition, wear the crimſon Livery of your wine: and many other examples (many whereof are enumerated by *Scaliger, Exercitat* 80. *Sect.* 8. *et exercit.* 298. *S.* 3.) do with Autoptical teſtimony eſtabliſh, that the intentional qualities, or repreſentative formes of ſenſibles, are by emanation, from their groſſer materials, delivered at a diſtance.

Et in genere Artificialia ſpecula hoc docent, quæ imagines viſibiles etiam diſſitarum rerum recipiunt.

These ſenſibles, in this abſtracted notion *Senſibiliæ*

1. Propria.

notion accepted, are (1.) ἴδια *proper*, which fall under the comprehension of one solitary sense, and hold no relation to any other; thus lucid and colorated objects are subject to perception only of the sight; sounds are the businesse only of the hearing, Sapors only affect the Gusto or tast, Odors the smel; and Tangibles concern only the Touch. (2.) κοινὰ *Common*, which are perceptible by all, or most senses; such are Figure, Magnitude, Number, Motion, and Quiescence.

2. Communia.

4. Medium. Lib. de Anima: cap. 11. text. 114: Ἄσθανόμεθα πάντων διὰ τοῦ μέσου. & de An. cap. 9. text. 89. τὸ ἐπ' αὐτῷ τιθέμενον τῷ αἰσθητηρίῳ ἀναίσθητον, εἶναι, κοινὸν πάντων, &c.

The last coadjutor is a Medium, which *Aristotle*, seduced by the concurrents to, & manner of vision, by an infirm illation from a plurality to an universality, concludes of uncontrollable necessity to all sension. But, under favour of so mighty a Prince of knowledge, this assertion, though by undenyable truth it hold good in vision; and by probable explication may be maintained in hearing, and smelling; yet how it can be made out in the touch, and tast, to which is required an immediate contact and corporeall imposition

sition of the objects on their proper sensoriums, seems no easie problem, and threatens despaire of determination to the boldest inquiry.

Concerning that grand question with so much ardor of contention, banded betwixt the surly disciples of *Plato*, and the more passionate scholars of *Aristotle*; *An sensio sit tantum passio; an verò etiam actio?* whether sension be a meer passion, and nothing more then the bare reception of sensible species; or whether besids this admission, there be required also an action done by the sensator? We conceive it the duty of our method to supersede the nauseous enumeration of the arguments which are planted by each faction, to defend their own, and batter the adversaries opinion, and only to present that positive and verisimilous assertion, which may best deserve our assent: And this is it, that the object emitting the sensible image, or imaginary Idea, is not the agent, or active principium of sension, but doth by tender, and oblation of the sensible species, obje-

An sensio sit tantum passio; an vero etiam actio?

objectively move the sense. Neither can sensation be justly defined to be onely a passive reception, as may be evidenced by this, that very frequently, although the sensibles are passively admitted into the Organ, yet is not the Organ actively deduced into sensation, when the soule in a naturall Extasie withdrawes her self from the distraction of the sense, and neglects the Cognition of objects: but is also a determinate action performed by the Sensator: whose dignity wee shall highly disparage, to deny it the prime activity in its own proper business. More briefly thus; the soul so farre forth as it discernes, and gives judgement of the objects, may, with safety of reason, be said to be active: but so far forth as the species are conveyed to the sense, by admission into the Organs, in which the soul affectively resides, it may, without danger of absurdity, be affirmed to be passive.

That the Externall senses exceed not the number of five, is the resolution of Philosophy; as uncontrollable

Deri Extasibus naturales suadere id videtur hoc; quod aliqui, quoties volunt, abstractionem & aberrationem mentis a Corpore pati possint. Cardan. de Varietate rerum & de seipso, & Facio patre id testatur, ac quoties vellent, animis sic abreptos scribit, ut nullum omnino dolorem in eo statu sentirent. August. de Civit. Dei lib. 14. cap. 24. Simile quid narrat de quodam presbytero &c. Et Anima aliis rebus ita intenta esse potest, ut speciem visibilem etiam oculo præsentem, & vocem aures circumsonantem, oculo & aure sana non percipiat.

Sensus Externi & tantum.

able as generall; for five invincible reasons: for in Natures wide Amphitheatre, the Universe, are ordained but five simple bodies (and, for ought we know, no distraction ever fell on so wild an Alogy, and grosse absurdity, as to dream of more) the Heaven and the four Elements; to which the senses by familiar analogy correspond; the sight (if we admit the doctrine of the sober Platonicks) claimes Kindred of the starrs, for its object is [illegible], shining and not burning; the smell resembles the fire, for all Aromaticks confesse an Empyreuma and large participation of that Element, and therefore *Fragrantia, quasi Flagrantia*, is more then a Grammarians Etymology; the hearing, by relation to its object, which is Aeriall, is allyed to the Aer; the Taste, for the same reason, is cozen German once removed to the Water; and lastly, the object of the Touch derives it self from the dominion of Earth.

2. In the great All (that is so much as lies in the narrow sphear of Human comprehension) are discovera-

ble

ble but five proper objects, *viz.* Colours, Sounds, Odors, Sapors, & Tactile Qualities, and who will find more must get out of *Trismegistus* Circle, and hunt on the outside of the world for them.

3. The Mediums required to the production of sension, are capable of alteration and predisposition but by five waies; which we must (such is the command of our method) with industry forget, and referr the disquisition of our friends to receive plenary determination from *Arist. Lib. 2. de Anima.*

4. There are no more, nor lesse then five senses necessary, *ad Esse & bene Esse vitæ.*

5. Experience, the grand inducement of our knowledge (on which we may most safely erect determination) witnesseth that no discovery hath or can point out more then five Organs, either in man, *viventibus*, the perfection, and therefore the norma or rule of all sublunary creatures, or in any other Animal.

CHAP.

CHAP. VIII.

Of the Sight.

HAving thus with temerity crowded through the conflux of Generalls, wee are admitted to particulars: and the ſenſe, which (deſervedly) firſt arreſt the eye of our obſervation, is the ſight. For although that immortall controverſie betwixt the two grandees in the common-wealth of learning, the Philoſopher and the Phyſician (two happy ſtarrs in conjunction, but oppoſed, they portend a deluge of Barbariſme) whether is more excellent the ſight or touch, depend in æquilibrio; yet have we thought it no impeachment to our profeſſion, to ſide with the Philoſopher, and vote for the primacy of the ſight, as by unqueſtionable right, and the prerogative of Natures bounty, properly belonging to it, witneſſe theſe ſubſequent conſiderations.

1. This demonſtrats to us more variety and differences of objects then any

any other sence; for all (at least most) bodies appear clad either in the livery of some one single colour, or in a variegated and versicolor dresse, and so fal under the perception of the sight, but not of the touch.

2. Besides its own proper object, it runs (with unlimited commission) through all the common ones, and surveyes the Figure, Magnitude, Number, Motion, Site, and Distance of each visible; so that from hence should any derive the pedigree of all Arts and Sciences, and affirm that from this Divine sence, as from the protoplast, all honorable inventions (those aërial ones of Musick excepted) have received their fruitful productions, and successive multiplications: we confess we could not disallow the probability of the Genealogy.

3. Vision is performed by a motion, swifter then that of ill-spent time, & even at the remotest distaces & for this reason, should we character the sight to be the shaddowes or representative reflex of the soul, as that

that is of Divinity, the resemblance would be our warrant; for as this comprehends the Idea's of things, exalted above the contagion of their materials, so that admits the incorporeal and intentional images of the objects: as the one is capable of two contraries, at one and the same instant of time, and distinguisheth betwixt true and false; so the other at once discernes white and black, and while it receives one contrary, is not hindered from the perfect dignotion of the other: the intellect enjoyes βέλησιν, a deliberation and arbitrary power of election and resolution, which submits to no compulsion; the sight in its action is uncontrolled, and boasts a liberty, which the indulgence of nature hath conferr'd upon it, but denyed to the younger brethren, the other senses; for the ears stand ever open to the admission of sounds, and the nostrils have no guard, but what they borrow from the hand, to protect them from the incursion of ingrateful and offensive odors; but the eyes are fortifyed with

with counter-scarfs, or curtains, wherewith, at pleasure, they may repulse the invasion of the destructive object.

3. The sight by its Ἀκρίβεια, exquisite and infaillible dignotion, and certitude, contributes more to our intelligence; for a Canon it is in the Civil Law, worn into a proverb, *plus valet oculatus testis, quam auriti decem*, the testimony of one eye-witnesse carries more assurance and authority, then of ten that assume their information from the eare. From these and other reasons of equal perswasive validity, we adventure to deduce the error of *Theophrastus*, who mistook the sight, for the essence of man, and that laps of *Anaxagoras*, who affirmed that vision was the prime end of our creation.

Visus elogium. How wonderful are the works of thy hands, Oh Lord! were but the Persian learned in the Opticks, how soon would he become this senses Proselyte, with blushes red as his angry deity, forgoe his fond Idolatry of the Sun, and addresse his

his more pardonable devotiō to the more glorious Luminary, the Eye, wherein the image of Divinity is far more reſplendent; for the Sun irradiates the world, yet without comfort or benefit to it ſelfe; but the bright Gemini of the leſſer world, do not only illuminate the body, but inform and delight themſelves in the beauty they diſcover: When the Sun goes down to wake the Antipodes, and leaves our Hemiſphear benegro'd, we can delude the Tyranny of Night with Tapers, and kindle an artificiall day; but when once our own lights ſuffer extinction, what an eternal blackneſs ſurrounds us? from which no beams, but thoſe of the Sun of glory can relieve us, & which, in this life is an affliction, that anticipats the horid opacity of the Grave. and had not the purblind Soul of *Momus* been more ignorant, then his calumny would have made Nature appear, he had diſcovered thoſe windows in the eyes, which his blaſphemy proclaimed deficient in the compoſure of man; or accordng

Mirantur Oculi, alamant, concupiſcunt, Amoris, iræ, furoris, miſericordiæ ultionis indices ſunt; in audacia proſiliunt; in reverentia ſubſident, in amore blandiuntur, in dio efferantur gaudente; animo hilares ſubſident, in cogitatione ac cura quieſcunt, quaſi cum mente ſimul intenti, &c. Laur. *Lib. de Senſ. Org.* 11. cap. 9.

to the charracter given them by *Alexander* the *Peripatetick*, ὀφθαλμὸς τῆς ψυχῆς κάτοπτρον εἶναι, they are the mirror of the Soul, wherein all her cloſet conceptions, whether peaceful or paſſionate, are written in the ſpiritual alphabet of looks, and intuitively legible; witneſſe the mute intelligence of Lovers, who can converſe like Angels, and conceive each other by glances, that ſignificantly deliver their apprehenſions, and carry with them the notion and contents of their deſires.

But we reduce our pen (that had not wandered, but in hope to have met with ſome encomium, that might have run parralel to the dignity of this learned ſenſe, and ſo expiated the digreſſion) back from this licentious ſeduction, and chain it to the definitive expreſſions of more ſevere Philoſophy.

Viſus
1. *Diſinitio.*
2. *Organon.*

The ſight is an exterior ſenſe, that receives and diſcernes external viſible objects, by the miniſtration or benefit of the eye, which is the adæquate organ of viſion.

This leſſer microcoſme, the eye,

is

is the instrument of sight, composed of six Muscles, three (the externall and conjunctive excepted) Coats or Membranes, three Humors, two Nerves, very many Veins and Arteries, and a large quantity of Fat: Of these parts, we shall only meet with so many as immediately are officiall to vision, and the first that among them salutes our observation, is the *Cornea Tunica*, Horny Membrane. *Oculi.*

This coat, being originally a derivation, or processe of the *Dura meninx*, and enshrining the whole eye, wears the Epithites Κερατοειδὴς, Corneous and Σκληρὸς Hard, from the manifest similitude betwixt it and a Horn, shaved to a transparent thinnesse; for in substance it is (1.) perspicuous or tralucid, that the visible species may have admission or transitus into the eye. (2.) Ἄχροος, void of all colour, that the images may permeate into the eye, clad in their native purity, and not disguised with the infection of any colour but their own: (3.) hard, that it may the better oppose exter- 1. *Cornea Tunica.* 1. *Perspicua.* 2. Ἄχροος. 3. *Dura.*

nal injuries: (4.) denſe, that their images after progreſſion through a thinner medium, the Aer arriving on a thicker medium, this Membrane may be refracted; for we are to obſerve in general, that ſince viſion is made by refraction, and refraction is made for the variety of the diaphanum; that all parts of the eye, that are immediately inſervient to ſight, do performe their office as they are tralucide and perſpicuous, and differ in diaphanity according to their tenuity and thickneſſe. The figure of this coat is round, that the eye might diſcern objects greater then it ſelfe. *Si enim Oculus non eſſet rotundus, quantitati rei capiendæ non ſufficeret. Vid. Perſpect. Comm. Lib. 1. propoſ. 29.*

4. *Denſa.*

5. *Rotunda.*

Between this Membrane and the Chryſtalline Humor, is lodged a liquid ſubſtance, called the Aqueous, or Albugineous Humor, which is ordained diaphanous, and void of all colour, for the ſame reaſons the Horny coat is ſo, and more rare then it, that here the ſpecies may ſuffer a ſecond refraction.

2. *Humor Aqueus.*

This

This liquor effuſed, the next conſiderable that occurs, is the ſecond coat, called ἀμφιβληστροειδὴς the the grapy Tunicle, from the reſemblance in colour and ſuperficies it holds with the kernel of a grape, and χοριοειδὴς, becauſe as the Chorion, it receives and ſupports the diſſemination of the Veſſells, which is a production of the *Pia Mater*, immediately inveſting the Optick Nerve, expanſed into a membrane. This, of all parts of the eye, onely is *diverſicolor*; for on the outſide, where it toucheth on the horny Coat, it bears ſables (a colour not to be found in any other part of the body, if *Galens* inquiſition ſatisfie, *Lib. de uſu part.* 10. *cap.* 3.) on the inſide, where it faceth the Aqueous and Chriſtalline Humors, it is of a dark grey, or duskiſh brown, inclining to black; but where it conſtituteth the greater Circle Iris, or the Rainbow, it appears ſometimes skycoloured, ſometimes green, and very often black.

3. *Vuea Tunica.*

Verſicolor.

Nigredinis uſus

Luces debiles in locis obſcuris magis apparent, in luminoſis latent.

Concerning the black tincture of this Coat, in that part, that reſpecteth the Chryſtalline Humor, Anato-

mists, and the masters of the opticks agree, that Nature intended it, either that the Chrystalline Humor being herewith veiled over, might the better recollect and congregate his own brightnesse, for, according to the position of *Alhazen. Lib. 1. prop. 33.* a small light in a dark obscure place is better perceptible, and diffuses a brighter lustre, then in a wide, light place, and makes the circumjacent parts more visible; so the internall splendor of the eye becomes more bright, and the visible images appeare more illustrious in the Chrystalline Humor, because the inner circumference of the whole eye is lined with this dark and obscure membrane, by whose shadow the Chrystalline is eclipsed; so that his refulgent brightnesse reflecting back from the opposite opacity of the membrane, is assembled and united in a more vigorous lustre: or for the collection, recreation and refection of the visive spirits; for when the Chrystalline is offended by a too vehement light, we for remedy close our eyes, and

the

the ſpirits recoyling back upon this naturall darkneſſe of the Coat, are reaſsembled and refreſhed; or for the interception of light; for ſince the anterior perforation of the grapy coat, is the only portal, built and deſtined to the immiſſion of the viſible images; and there ought to be no ſecond paſſage whereby the light might intrude it ſelfe, what could Nature more conveniently have thought on to exclude the light, then the interjection of this black curtain when experience hath confirmed it an Axiome, that nothing better intercepts and ſhuts out light, then the interpoſitiõ of opace bodies.

Iridis uſus.

But concerning the main intention of Nature, in her embrodery of this Coat (in that part, which looketh outward, and makes the parti-coloured rainbow) with ſuch variety of dies, and whether ſhe contrived it either for neceſſary uſe (which is moſt probable) or pleaſant ornament; we find the Curioſities of Oculiſts rather amazed, then their diſquiſitions ſatisfied. Wherefore we think it ſafe for us

Iris oritur exinde, quod uveæ Tunicæ limbus varios colores habet.

Pupilla.

to fix on nothing, but a ſceptical neutrality; and to acquieſce in no other reſolution, then to ſit down, and modeſtly expect the determination of future diſcovery.

In the forepart of this membrane is a ſmall Foramen or perforation, through which the viſible images are intromitted to the Chryſtalline, called the Pupilla, which vulgarity tranſlates the Apple of the Eye, the narrow circumference of this (comparatively to that of the Chryſtalline, or Cornea) principally conduceth to the perfection and diſtinction of viſion: yet in many the amplitude varies; and thoſe in whom Nature hath framed it very narrow, are quick and acute ſighted: but thoſe who have it more dilated, ſee but weakly and obtuſely.

Dilatatio & Contractio.

This Apple of the Eye is daily Coangusted and dilated, and appeares much more coarctated in a luminous, then in an obſcure crepuſculous place; For ſince an Exceſſe of light is deſtructive, and the defect of it inſufficient to viſion: the Eternall wiſdom hath, in the very entrance of

of the Eye, contrived this window capable of dilatation and contraction: in dilatation to admit so much of the weaker light as is required to perfect and distinct vision: in contraction to exclude so much of the copious and excessive, as would either offend, or perish the Organ. *Dilatationis Causa.*

When we enquire the cause of this dilatation, Common and popular Philosophy referrs us to the Animal Spirits, and believes that the Apple of one Eye is dilated when the other Eye is closed, because of the conflux, and congregation of all the visive spirits into the open Eye: But this doth not satisfie our scrutiny, since though both eyes are open, yet wee plainly discover this dilatation and Contraction. For (according to the annotation of *Jo. Bapt. Porta Lib. 3. de refract. cap. 6.* and the confession of *Hieron. Fabricius ab Aquapendente. Lib. de vision.* part 3. c. 6.) if we look into the Eyes of any opened against the Sun, we cannot but perceive the Pupilla to be so straightly coangustated, that there will appear hardly room enough to admit the point

point of a needle. The learned *Schegkius*, in his Book *de Spirit. Animal.* teacheth us, that the Foramen of the *Uvea tunica* is ampliated and widened by the Contraction of Muscles in the root of the Eye, which immediately invirons the optick Nerve: but contracted by the relaxation of the same; for the Coates seem terminated in the Extream or root of the Eye. And, in our approbation, this weighs heaviest in the ballance of Truth.

Gradus visionis.

This admirable constitution of the *Uvea* occasioneth those three naturall degrees, or graduall differences of our Sight; (1.) *visus perfectissimus in indivisibili constitutus*, when we, with the exquisite distinction discern σώματα ἀδιώρετα, minute atomicall bodies: (2.) *perfectus*, when, at a proportionate distance, we distinctly see the object, but not apprehend the minimum, the smallest particle of each: (3.) *imperfectus*, when, besides those objects, which are *è directo* opposed, we also have a confused and glimmering apparition of other; placed *ad latera*, on the right, or left hand.

1. Perfectissimus.

2. Perfectus.

3. Confusus.

The

The cause of which difference is thus made out; since the comprehension of the visible image is made *per pyramidem*, by an acute angle; but the Certification is made *per Axem*, by a direct line; and onely that perpendicular radius, which is called the *Axis*, and is not refracted, doth powerfully and distinctly represent the object; but all other *obliquæ radij*, by how much they are nearer unto, or removed from the Axis, are by so much the more, or lesse efficacious and conducible to representation. Hence comes it, that when the Pupilla is contracted to a smaller circumference; onely the direct and perpendicular radius in the visive Pyramid enters to the Center of the Chrystalline, or together with it those radij which are neareſt to the Axis: but when it is dilated, many other oblique and refracted beams, rush together with the perpẽdicular, and confuse the vision. And the barbarous experiment of **Dionysius*, the Sicilian Prodigy, hath with learned tyranny confirmed, that if the Pupilla, when it is dilated, be suddainly

Graduum visus causa.

**Dyonysius supra carcerem tenibricosum, domum extruxit lucidissimam, clarissimam, calce illitam; & homines carcere obscuro diu conclusos, ex profundis tenebris in lucem splendidissimam Educendo peccavit.*

ly assaulted with a glorious light; and the lines produced from the circumference thereof doe make a right and obtuse angle in the Centre of the Chrystalline, then is the sight not onely offended, but abolished.

Within this dwells the inestimable Orient Pearle, the Chrystalline Humor (named by *Galen*, κρυσταλλοειδὴς ὑγρὸν, by the modern Anatomists, *Chrystallinus* and *Glacialis*, because the tralucency of it equalls that of a concretion of yce or Christall) situated, not in the Centre (as some opinion) but the anterior part of the Eye. The substance of it is wholy Aqueous, not diffluent, like that of the Albugineous, or Vitreons, but condensed and concreted like Chrystall; that the *Linea Visualis* may herein be strongly refracted.

Humor Chrystallinus. Ejus.

1. *Situs.*

2. *Substantia.*

For though it be a Doctrine generally preached, and countenanced by a Syndrom or Conspiration of the greatest Enquirers into this part of knowledge; that the Chrystalline

3. *Usus.*

is

is the center and Soule of the eye, the principal and approximate Organ of sight, and that herein, and no other part, is made both the reception and sensation or dignotion of the visible species: yet (under favour) it seems not to have hit the center or unity of truth, and is not ratified beyond a modest dispute: And they, who encounter this opinion, and affirm, that vision is not terminated in the Christalline, but that the images transmitted through, and with a commensurable allay of refraction prepared in the Chrystalline, are delivered into the glassy Humor, there again refracted, and collected into one puncto, are communicated to the Retina (which is the medullary substance of the Optick Nerve, expansed into a net-like coat) and so presented τῇ ἡγεμονικῇ, to the principal Faculty residing in the Braine; come armed with no small strength of argument and power of reason. *Nam cum refractio ad visionem sit summè*

Humor Vitreus. Et utilitatem et modum hujus refractionis aliquo modo perspicere monstrant, quæ visibilia et

clariora, et majora faciunt, quod species visibiles primò ab aëre, ut diaphano tenuiori, transeunt perspicilla, ut diaphanum crassius, et inde rursus per aerem, atque hinc iterum per corneam densiorem, et per corneam rursum in Aqueum tenuiorem, atque hinc in Christallinum densiorem, &c. Scen. Lib. Instr. 1. cap. 12.

necessaria; et cum vitreus, et ipse factus sit perspicuus, omnis coloris expers, Christallinoq; rarior, & sedem post Christallinum habeat, eamque quantitatem obtineat, quæ ad refractionem hanc respectu magnitudinis et densitatis Christallini necessaria est in eos radios, ubi Christallinum transierunt, refractos in unum punctum colligi, et retiformi tunicæ, seu Nervo visorio offerri, summe probabilis videtur sententia. And therefore both *Galen* and *Laurentius* highly disparage the dignity of the glassy humor, the one in *Lib. de usu part.* 10. *cap.* 1. making it the Aliment of the Christalline, delivered to it *per* Δίδοσιν by transumption; the other, *Lib.* 2. *de sens. Organ. cap* 7. assigning it to no other office, then to be the recipient and continent of the visile Spirits. εἰς ἐκλάμψιν for the irradiation or illustration of it: when most probably, the proper use of it, is, to be the last diaphanum, or tralucid medium, wherein the radij, after their transitus through the thicker diaphanum, the Christalline are anew refracted, conglomerated, and united into one point, wherein the

Ejus usus.

the visible image is comprehended and represented.

The two Optick Nerves have their original from the inferior, and posterior part of the Brain, and in a long tract or production travail to the fore-part of the head, and are there inserted into the eyes; but in their journey thitherward, when they have made some progression from their exortus, they meet, copulate, and concorporate, not by χιασμὸς intersection, or thwarting each other by cross angles, like a Saint *Andrew's* Cross, not by adherence or decussation, but by unition and substantial confusion. *Nervi Optici:*

The reason of this coition, *Aristotle*, *Lib. Problem* 1. *Sect.* concedes to be, that the forms of visible objects may be united; for though the species be carried through two distinct Organs, yet they appear single, and not double: Of the same opinion also was *Galen*, *de usu part.* 10. *Cap.* 14. But the observation of *Vesalius* is sufficient confutation for this; for he took notice in the dissection of a young man, that the Optick *Eorum unionis causa.*

Optick Nerves did no where make this incruciation or coalition; yet he never in the whole course of his life complained of any depravation, or hallucination of sights and indeed their conceit will better endure the examen, who think it a provident forecast in Nature, that all the Optick spirits, sent from the brain to the service of both eyes, may, when one eye is shut, or when any other necessity requires, flow into the open eye, and by the more united & acute vision of that, recompense the defect of the other; which use is of great moment with us frequently, for when we desire to behold any object acutely and distinctly, we veil one eye, and fix the other *è directo* on the object; and would be of greater, if the assertion of *Io. Bapt. Porta Lib. 6: de refract. Cap. 1.* that we never see but with one eye at once, could be made good.

Vesalius Lib. 4. de Fabr. corpor. Human. cap. 4.

Et si igitur duos oculos homo habeat: dextro tamen præcipuè utitur, si quid à dextris, sinistro, si ea quæ a sinistris visurus est, atque ita una vel unico imprimis oculo videt, etsi utrumque apertum habeat.

But since the Axis of the visive Cones, diffused from the object, and carrying along the effigies of it, shoots into the eye in a perpendicular or direct line; if the eye were nayled in its orbita, fixt and immovable, it could comprehend no object, but what lies *à directo* opposit and point blank against it; and so by strict consequence, we should either be driven to traverse the whole machina of the body for a position of the eye requisite to vision, or have this sence (whose glory builds on variety) restrained to the theory of so few things, that we should have been subject to more discomfort, from their paucity, then information or delight from their discernment; that therefore we might enjoy a more enlarged prospect, and read over the whole Hemisphear in one momentany act of vision, Nature hath provided the eyes of Muscles, or instruments of agility, whereby they can (with so much rapid speed, that comparatively to this, the motion of the Sun seems slower then the advent

Musculi Oculorum.

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of *Plato's* Jubilee) apply themselves to every visible, & hold a voluntary verticity to the object. *Parvula sic magnum pervisit pupula Cœlum.*

And of these ocular Muscles there are in man just so many, as there are motions, four direct, and two circular, all situated within the cavity of the scul, and accompanying the Optick Nerve, and all conjoyning their tendons, at the corneous, do constitute the nameless Tunicle, so named by *Columbus*, as if it had escaped the observation of the antient Anatomists; when (in truth) it had not the mention of *Galen*.

Galen. L. 10. de usu partium. cap. 2.

1. *Attollens.* The first of those implanted in the superior part of the eye, and draweth it upward, whence it is called *Attollens*, the lifter up; and *superbus*, the proud; for this we use in haughty and sublime looks.

2. *Deprimens.* The second situated in the inferior part, is Antagonist to the former, and stoops the eye down toward the cheek, and from this is called *Deprimens*, the depressor, and *Humilis*, the humble Muscle, for this position of the eye speaks the deje-

dejection and humility of the mind.

The third ſeated in the *Major Canthus*, or angle of the eye, and leading it toward the Noſe is called *Adducens et Bibitorius*, for in large draughts we often contract it. 3. *Adducens.*

The opponent to this is the Muſcle in the minor Angle, which abdureth the eye *ad latera*, therefore called *Abducens et indignatorius*; for when we would look with contempt and indignation, we by the contraction of this Muſcle, hale the eye into an oblique and ſcornful poſition. 4. *Abducens.*

If all theſe four work together, the eye is drawn inward, fixed, and eſtabliſhed; which kind of motion Phyſicians call *motus Tonicus*, we in our language, the Set, or wiſt look.

The fift ſlender oblique Muſcle, running betwixt the eye, and the tendons of the ſecond and third Muſcles, by the outward angle, aſcends to the ſuperior part of the eye, and inſerted neer to the Rainbow, circumgyrats the eye downward. 5. *Obliquus.*

The laſt, and ſmalleſt, twiſted 6. *Trochlea.*

into a long Tendon circumrotates the Eye towards the interior angle, and is called the Trochlea Muscle or pully. These two circumactors are surnamed *Amatorij* the Lovers Muscles, for these are they that wheele about the Eye in wanton or amorous glances.

Objectum visus. Although our reason embrace for a verity, that admits no dubitation, that the object of Sight is Visible; in generall whatever submits to the comprehension of the Sight; and in particular, that the proper and adæquate object of this sence is Colour; for nothing is visible but under the gloss and vernish of Colour, nay, Light it self (which some entertein for the second object of vision) submits not to the discernment of the Eye, *quatenus Lux*, under the notion of its own formality, but *instar albedinis*, as it retaines to whitenesse: yet when it attempts an established and satisfactory theory of the true nature of Colours; it soon runns to a stand, and discovers nothing of more certainty, then that this jewell, the knowledge of

the

the nature of colours, is only digged out by the miners after Knowledge, but no hand was ever yet so happy as to be constellated to the Exantlation or landings of it.

1. For the subtle Genius of Nature *Lib de sensu & sensili. cap.* 3. defines Colours to be τοῦ ἐντοῦ σώμασι διαφανοῦς τὸ ἔσχατον, the extremity of a diaphanum terminated; and subjoines, that Colours belongs to al things *ratione perspicuitatis*, and that the diaphanum or pellucid body terminated, is the subject of Colour; For if the *perspicuum* suffer condensation to the amission of its transparency, and so forbid the transmission of the visible species, it become colourated, and may be said to be terminated; for it prescirbes bounds and limits unto the sight, and determines the act of vision; And thus ascribes the Causes of Colour unto the graduall termination of the diaphanum; which proceeds (1.) from the condensation of the diaphanum alone, without the admistion of any other body; thus starrs being lucid bodies compacted, be-

come visible: (2.) from the commistion of an opace, with a tralucent body, thus Fire, in the primitive simplicity of its own nature most perspicuous, appears red, because commixt; and obnubilated with fumes and exhalations; and thus from the concorporation and mixture of one Element with another, of a lucid and transparent with an opace and terrestrious, come forth the primitive and ground colours; and from the various and complexed unition of these first and father extream colours, all other intermediate and changable tinctures deduce their originall.

De colorum commistione & speciebus, multa egregiè scripsit Scalig. Exercitation. 325.

2. Others refer the causes of primary and secundary Colours to the graduality of opacity and light.

3. And the Chymists (who in their laborious exploration have outdone all other in this abstrusity) reduce their causes unto *Sal*, *Sulphur*, and *Mercury*, and believe that bodies receive lustre or obscurity, and by sequell, the various degrees of colours, from the various mixture of their volatile with their fixt salt.

But

But from neither, not all of these opinions ariseth, to a subtle examination, satisfaction enough to terminate our Enquiries, or to accuse us of singularity, if (in this particular) we appear scepticall, and professe to suspend our adhærence to authority, untill it shall, with lesse obscurity, attempt the revelation of this Magnale.

The Medium of Sight is τὸ διαφανὲς *Perspicuum*, all bodies qualified with pellucidity or perspicuity: and the σκοτεινὸν hath more opacity then the Medium. Hence is one Element perceptible in another, water in Aer, and Earth in water; and the same colorated thing is conspicuous in pure and limpid waters, but invisible in turbid and polluted. And for this reason a colourated object may be a Medium, provided, that it be not absolutely opace, but more tralucent then the visible. For thus *Brassavolus* saw his Pismire, and *Cardan* his Silkworm, through the diaphanous solidity of their Electricall Mausoleums.

Medium visus.

That Vision was done by Emission, and that the Optick spirits did

Modus Visionis.

in a continued visive radius stream from the Eye to the object, and so apprehend it; was an error of no meaner Extraction, then the great Patriarch of the Stoicks, and adopted to the patronage of all Philosophers, that spent that long intervall of time, betwixt him and *Aristotle*, but exiled by the justice of *Aristotles* reason, it for ever resigned the possession of the Schools, to the just dominion of truth: and since few have been such stubborn votaries to the tyranny of ignorance, as not to subscribe the opinion of *Aristotle*, that vision is made by the reception of the visible images into the Eye; and that neither *radii*, nor Light, nor Spirit, are emitted from the Organ towards the object. The reasons are most elegantly recited by *Jul. Cæs. Scaliger*, *Exercit.* 325. & 298. & 289. Sect. ib. &c. *Fabri. Lib.* 2. *de visu cap.* 4. 5. and *Andr. Laur. Lib.* 2. *de sens. Organ. Quæstione prima.*

Finis visionis.

When we look within our selves, and read the end and duty of our sight, we cannot but conceive the Error

Error of *Anaxaggras Homines ad videndum esse natos*, more veniall then that of *Aristotle* and most of his Pupils, *Visum esse sensum Commoditatis*; and could heartily wish he had said *Fælicitatis*. For the beatitude of man is Essenced in the Knowledge and contemplative (though but graduall) comprehension of God; and no sense so clearly manifests the immense glory of the Creator, as this that is familiar with the beauty of the Creature. For though the Brutall part of mankind, overrun with sensuality, think the institution of their Creation satisfied in the actions of sense, and seldome look beyond the barks and Exteriors of things; yet the Philosopher extends his eye to invisibility, being ravished with the borrowed glory of the visible; and some have been beholding to their sight for their Conversion, and happily confessed, that the Eye of their sense hath directed the acies of their reason to the essence of all essences, and soul of all causalities.

CHAP.

Chap. IX.

Of the Hearing.

'Twas a Hypochondriack absurdity of *Plato*, that all our Cognition is but Recognition, and our acquired intellection, but a reminiscence, or rehersall of those primitive lessons the Soul had forgotten, for proper Science is proper onely to Omniscience, and not to receive knowledge by infusion, or acquisition, but to have it spring from the fountain of his own essence, is the attribute onely of the Essence of wisdom, and a priviledge due to none, but the Antient of daies, to have his knowledge deriv'd beyond Antiquity: but Man, poor ignorant Man, commanded into the World on the design of knowledge, must sweat in the exploration and pursuit of it and can never possess any science, in this life, but what hee must dearly purchase with his own discovery, or precariously borrow from

from the bounteous industry of his Forefathers. Now that the mind of man might partake the notion of what concerns this, and the future life, his Creator hath furnished him with the sense of Hearing; the sense particularly and expressly disposed for Discipline, for though wee sing Hymnes to the Eye for the invention; yet we must acknowledge a sacrifice due to the Ear, for the Communication, and distribution of Arts and Sciences. And this the Ægyptians intimate in their Hieroglyphick of memory, and the Philosopher expresseth in his character of the Hearing, *Auditus est sensus disciplinæ*: and the glory of our Century, *Sennertus* elegantly delivers thus. *Aures in Homine quasi porta mentis sunt, per quam menti communicantur, quæ doctrina & institutione de Deo & aliis rebus necessariis traduntur, quæque nullo alio sensu addisci possunt.*

Quemadmodum aspectus ad vitæ dulcedinem, & commoda magis est necessarius, ita Auditus ad accipiendam artem, sapientiam & scientiam est accommodatior. Ille ad inventionem, hic ad Communicationem aptior est Lauren. Lib. 2. cap. 12.

The Hearing is an Externall sense receiving and perceiving πάθος all founds audible, by the benefit of the Ear. 1. Definitio.

The adæquate instrument of 2. Organum.

hearing

hearing is the Ear; divided by Anatomists into the (1.) Externall, and (2.) Internall.

1. Auris Externa.

The Externall Eare, or *Auricula*, (intended by *Hippocrates* in that prognostick, ὦτα ψυχρὰ, καὶ διαφανέα, καὶ συνεταλμένα, ὀλέθρια, *Aures frigidæ, pellucidæ, & inversæ mortiferæ*) was intended by Nature (1.) for Ornament; (2.) for the refraction of the Aer, whose uncorrected violence and impetuosity, would otherwise shatter the Tympanum or Drum-head; (3.) to catch and collect the species of soundes diffused and scattered in the Aer, and through its unfractuous Convolutions convey them into the πέρις ἀχυστικὰς, or auditory cavity. For those that have lost their externall Ears hear but obtusely and confusedly, and receive all sounds and articulate voices, like the purling murmur of a rivulet, or the fritiniancy and shrill note of Grashoppers. Hence Brute Animals, by the dictate of instinct prick up or arrect their ears in a position to meet and intercept the wandering sounds; Hence *Hadrian* the Empe-

ror

or to palliate his Βαρυκοΐα and extenuate his imminution of this sense, set his hands to his ears in a prominent posture, with the palmes forward; and hence those Scythians, whose outward ears are syderated or sphacelated by extremity of cold, plant Cockle, or Schallop shells in their rooms, for the congregation and direction of the sounds that preterlaps the *Meatus Auditorius*.

Hinc exactius audiunt quibus aures anterius prominent, & si non nimium, tam en longo decubitu, quam neutricum ligaturis, aures depressas haberemus, rectius audiremus.

The external Aer charged with the audible species, and thus qualified and conducted by the outward, is wafted into the inward ear, through the πόρος ἀκουστικὸς or auditory Canale, which is a long, sound, oblique perforation of the *petrosum*, or stony bone, invested with a thin, dense, hard, perpolite skin, that firmly adheres to the bone, that the sound may herein suffer densation, collection, and turbination. In this Cavity is found that bilious humor (called by *Ægineta* ῥύπος ἐν τοῖς ὠτὶ *fordiculas in auribus*, and by the vulgar English, the eare-wax (or gluttinous expurgation of the

2. *Auris interna.*

1. *Meatus auditorius.*

the brain, provided (if we reje
not the conception of *Cicero*; for th
inviſcation of the Auricular
Earewig, and other ſmall inſects.

Cicero 2. de Natur. Deorum ut ſi quæ minima beſtiola conetur irrumpere, in ſordibus his, tanquam in viſcie hæreſcat.

In the end of this Foramen i
ſpread a tranverſe interſtitiary, o
round parchment (called by ſom
Anatomiſts the myrinx, by other
the mediaſtinum, by moſt the Tym
panum, but by the beſt the drum
head) to exclude the external fro
ruſhing in, and concorporating wit
the internal or congenite Aer; fo
ſince the external Aer is ſubject t
Anomalies, incraſſation, humecta
tion, and inquination; were it ha
admitted to a conjunction with th
originary internal, it would per
turb the native tenuity and puri
thereof, and impoſe upon it the
contagion of its own impreſſions.
The ſubſtance of this partition i
not oſſeous, leſt the ſounds ſhoul
be repulſed; nor carneous and ſoft
for that was abſolutely unapt fo
tranſmiſſion of the ſounds; but
membranous and nervous; yet pel
lucid, thin, and ſubtile, that the
founds may be intromitted to the

a. *Tympanum.*

inge

ingenite Aer; for those, who have this membrane incrassated, and too much condensed, from the primitive conformation, suffer a κώφωσις, or deafnesse incurable, and must expect the attenuation and rarefaction of it, from the energy of no heat, but that of the Sun of Righteousnesse, which ariseth with healing in his wings; and the dryest of any Membrane in the body, for the better reception of the sounds: for dry & hard bodies principally conduce both to the admission and resonation of sounds; witnesse our experiment in musical instruments and the Aphorism of our Oracle; in his description of the Tympanum: To δερμὰ τὸ πρὸς τῇ ἀκοῇ πρὸς τᾷ ὀστέῳ τοῦ σκληροῦ λεπτὸν ἐστίν, ὥστε ἀράχνιον ξηρότατον τῶν ἄλλων δέρματος. Τεκμήρια δὲ πολλὰ, ὅτι ξηρότατον ἠχοῖ μάλιστα. There is in the ear, neer to the rocky bone, a thin filme or tunicle, like the spiders web, and of all other membranes the dryest, but that, what hath most Siccity, is most apt to resound, there are many Evidences.

Hippocr. Lib. περὶ ἀρχῶν.

Behind this traverse, in the second

Officula tria.

cond cavity of the eare, are found the three small bones, *Incus*, *Stapes*, and *Malleus*, the Anvil, Stirrop, and Hammer, in probability, borrowing these appellations, rather from their Figure, then office: For since solid, compacted, and polit bodies are most accommodable to the impulsion, delation, and communication of sounds, the soul of reason, the Creator framed these three bones, substantially very hard and solid, and superficially peepolite, that by their durities, and laivity, the sounds may be delated to the implantate Aer; and contrived them naked & uninvested, for were they obducted with any softer involution, they would be inofficial to pulsation, and the successive trajection of sounds: and for no other reason their dimensions are the same in all constitutions, and their magnitude in an Infant, equal to that of those in ful grown procerity.

Sunt hæc ossa solidissima, & resonent; & quod mirum est, eorum in puerulo, eadem est, quæ in sene magnitudo. Andr. Laur. Lib. 2. cap. 13.

4. Aer implantatus.

We shall here, with resolution, be guilty of the omission of some parts in the ear; concerning whose use, Authors deliver more of conjecture

jecture then certitude, and rather betray our diſquiſition into the perplexity and wildernesse of opinion, then conduct our curioſity home to the point and unity of eſtabliſhed truth; and apply our perpenſion only to the implantat Aer, being a ſubject as full of obſcurity, as worthy the induſtry of the ſubtileſt exploration. For though all parts in the ear be neceſſary to audition, that the vitioſity or defect of any induceth a depravement or aboliſhion of the action of all: Yet it is an opinion vulgarly paſſant, deriv'd as high as *Plato*, aſſented to by *Galen*, and confirmed by *Ariſtotle*, *Aerem implantatum eſſe principes auditus Organum*, that the Originary Aer is the precipuous inſtrument of hearing. For as to the reception of the viſible image is provided an internal fulgor conſociable to the external, which ſhould *propter ſimilitudinem ſubſtantiæ*, with familiarity entertain the external: ſo alſo in the ear is there Aer, an aeriall ſubſtance, generated of the moſt pure,

Galen. 7. de decret.. Hippocrat. & Platon. cap. 5: Ariſt. Lib. 2: de An.

and rarified portion of the generative materials, the ſeed and maternall blood, which by reaſon of congination, and ſimilitude of ſubſtance doth welcome and embrace the delated ſpecies of ſounds. But to conclude on the place and ſituation of this implantate Aer, ſeems a buſineſſe of no ſmall abſtruſity: *Hieron Capivaccius* ſeats it in the expanſion of the auditory Nerve; *Archangelus Piccolomin. Lect.* 5. is poſitive that it is pent in the extream cavern, or inmoſt den, drilled in the *os petroſum*; and *Hieron. Fabricius ab Aquapendente* beleeves, that all the cavities, angles, and creeks of the internall ear (which otherwiſe had remained *naturall Groteſces*, and hollow vacuums) are poſſeſſed and replated by the implantate Aer.

Sedes aëris implantati.

We muſt not indubitate the exiſtence of this innate Aer, nor queſtion the veriſimility of the opinion, that it is included in the ſinus of the ear, to ſymbolize with the external advenient Aer, and ſo invite, at leaſt, admit it; but that

Vſus aeris implantati.

the

the principal and judicatory instrument of Audition, is Aer, we dare suspect, and can produce warrant from no contemptible authority to deny. For *Heroules Saxonia*, and *Andreas Laurentius*, (men whose names are Antidote sufficient against prejudice) account the implantate Aer, only for the internal medium, inservant to the convoy, and transmission of all sounds, simple or articulate, into the true and proper Organ of hearing; and teach us, that the Acouſtick Nerve, determined and expanded in the extremity or bone of the Cochlea or Snayl-shell, is the approximate Sensorium of Hearing. And *Galen. Lib. 1. de caus. ſymptomatum. Cap. 3.* leaves it for granted, that the prime instrument of the hearing is τὸ ἔσω μέρος, the internal end or extremity of the conduit. For the implantate Aer is the receptory of the species audible discharged from the external Aer, through the anfractus and sinuous tortuosities of the ear, and

immediately transfers them to the auditory Nerve; which is an exortus or production from the fifth conjugation of the brain, running through the perforation of the os *petrosum* into the ear, and thereby a particular constitution, determined and continued for the special and determinate comprehension of Audibles. And a Catholic Theorem it is, sworn to by *Aristotle*, 2. *de Anima*. *Nihil expers Animæ alicujus sensus est instrumentum*; but this innate Aer partakes not animation; for the Soul is not *actus corporis simplicis*, but *Organici*; wherefore it cannot be the immediate Organ, but the internal medium of audition, generated of the ambient Aer, not by concoction and elaboration, as are the Spirits, nor thereby any action of the Soul, but by the perpetual arival of new Aer which is partly transcolated through the Tympanum, and so delated into the Cochlea or Snayl-shell; and partly derived thither through the slender perforation

Vid. Andr. Laurent. *lib.* 2. *de sens. Organ. Quæst.* 10.

or pipe opening into the Palate. Hence may we resolve that Problem, why oscitation or yawning perturbs our Hearing? For in oscitation, the expulsive Faculty endeavours to discharge a dull vapour lodged in the cranies and chinks of the throat, which arising in compression of the parts, unto the ears, by those Foramina, made from them into the palate, groudes into the Snayl-shell, and causes a tonitruating and tumultuary noise, which drownes, or adulterates the calmer and more delicate species of sounds offered from without.

The external medium of this sense is τὸ ἀκουστὸν, *Personabile*, Aer and Water: Both which elements (though *Aristotle* deafe unto the experiment of nocturnal piscation, would not hear of the latter) concur in their efficiencies, and contribute their faculties to Audition, in more then a single respect, (1.) as a medium qualified both for the reception, and transvection: (2.) as materials necessary to the pro- *Medium externum.*

production of sounds. For in concussion, the Faculty of the Medium, or potentia of the Material, is activated, when it is intercepted and dilacerated betwixt two solid bodies vehemently charging each other. And a sound is a quality produced from Aer, or Water percussed and fracted by the suddain, and violent concussion or arietation of solid bodies. Hence is it manifest (to the capacity of any head, that was not constellated to ignorance,) that to the generation of a sound, is required the conspiration and concurrence of three concomitant, or rather, successive Actions (1.) the affront or shock of two solid bodies (2.) the Elision or disruption of the Medium (3.) the resonance of the Medium; after which, immediately succeeds the sound.

Objectum Auditus.

The manner of this laceration, the most Elegant *Julius Cæsar Placentinus* delivers thus. When two solid bodies strike one against the other, the intermediate body is with such impetuosity impulsed that

Fractionis Modus.

that the Atomical parts of it cannot observe the order of motion by succession one after another; but rather disorderly throng and prevent each other, before the first part hath avoided the place, another is driven upon the neck of it, and so the motion, which when successively performed, is gentle and easie, becomes, by reason of this inordinate impetuosity, tumultuary and tempestuous. Hence is it that soft and acute bodies yeeld no sound in their collision, because the stroke betwixt them doth not so disparkle or shatter the intermediate body, that thereon should follow any interpretation or fraction, whereby the calme and successive dissipation yeelding may be prevented.

Audiendi modus.

The External Aer, thus qualified with the impression of a sound, alters the next adjoyning Aer, and this impells and alters the next to that, and so successively untill it arrive by contiguity and continuation it arrive at the ear; For as

on the injection of a ſtone into water, there will ariſe circles on the ſurface of the water, enlarging and purſuing each other: ſo from the eliſion of Aer, are there generated inviſible aeriall circles, moving in ſucceſſive rounds, or vocall waves, untill they attain unto the Organ of Hearing. But this undulation is not diſpatched in a moment, but in progreſſion of time. And for this reaſon, a ſound is not preſently after the ſtroke delivered to places at diſtance: we behold the Coruſcation of nitrous and ſulphurous exhalations, fired in the Clouds, ſome minutes before wee hear the fragor given upon laceration: and wee diſcern the flaſh, a good ſpace of time, before wee hear the report of a Canon: and in the open field we plainly perceive the arme of a man, hewing wood, lifted up for the ſecond ſtroak, before wee have heard the firſt.

The Aer thus impregnated with a ſound, conducted and conglomerated by the Externall ear, firſt ſtrikes upon

upon the most dry, and resounding membrane the Drum-head; this thus strucken, justles and impells the three small bones, and impresseth the Character of the sound on them: they immediately glance it forwards to the implantate Aer: this shoots it through the windowes of the stony bone, into the winding Burroughs; thence wafts it into the Labyrinth; thence into the snail-shell, and at last surrenders it to the Acoustick Nerve, which presently transmits it to the Common sense, as unto the Censor or Judge.

CHAP.

CHAP. X.

Of the Smell.

THis is the middle Finger in the left hand of the sensitive Soul, and like vertue, dwells in *Medio*, between the other four, whose Natures stand farther removed from mediocrity; For the Sight and Hearing extend their comprehension to the largest remove of proportionate distance, and can arrest the object without the line of their own situation: The Tast, and Touch work not, but by contaction, and are not active beyond the narrow Orbe of corporall Contaction, and substantiall admotion: But the smell, whose nature is a reconciliation of the others contrary Extremes, and a power in which are united the opposite impossibilities of the rest, is actuated into apprehension, partly by the interposition of a medium, and partly by the contiguity and approximity of the object. Wee

We may therefore define Smelling to be the middle sense of the five externall, which perceives the Odors of things drawn in by the nostrills to the mamillary processes of the brain, for the use and Commodity of the Creature. 1. *Definitio:*

That the Object of Smelling is an Odour, is a universall Theorem graciously established beyond the denial of any: but what the nature of an Odour is, hath been a Catholick Problem, mysteriously removed above the comprehension of most. *Heraclitus* cited by *Aristotle Lib. de sens. & sensili. cap.* 4. many of the primitive Philosophers, and most of the Family of *Æsculapius*, have left on record, for an indubitable maxime, that the smell is not affected only with an incorporeall quality, or spirituall species: but that a certain aerial, subtile substance, or a vaporous exhalation is expired from the Odorate Object, which doth substantially move the sense and *Galen. de instrum. Odoratus cap.* 2. (though the Charity 2. *Objectum.*

of

of *Casserius Placentinus* attempts a witty vindication of so honorable a judgement from the guilt of Error, and would have us by *substantia* under *Subjectum Odoris*) stroke in with them and resolved thus; that which exhaleth from the bodies of things is the substance of an Odor. On the contrary, *Aristotle*, and all his tribe determine an intentionall and no substantiall Emission; and that onely the bare image exhaling from the odorate body, is delated unto, and apprehended by the Organ of smelling. And in truth this latter latter opinion deserves priority, provided wee admit it with modest Caution and discreet limitation: although the former includes something of reason, and but in part deviates from the tract of truth.

Odores non sunt substantia.

For first, the magick of no arguments must seduce us to admit, that Odors are corporeall substances, *Sensus enim substantias non percipiunt, sed tantum earum accidentia*; and wee have already demonstrated, that

no

no ſenſe is actuated into ſenſation, by the reall or materiall, but by the ſpirituall or intentionall quality of the object. Wherefore we ſhall be unreaſonably partiall to deny the ſame to the ſmell; and muſt conclude that nothing corporeall, but onely the ſpecies, by *Aporrhoia's* ſtreaming from the odorate body, doth invade the Organ of ſmelling. And on the other ſide, the infidelity of no Academick can be ſo obſtinate, as not to acknowledge, that there is an Effluvium or exhalation from the odorate object, diffuſed into, and tranſported through the Aer; for quotidian experience learns us, that odorate exhalations extend their ſubtile Energy, not onely to the production of divers affections in the brain, proportionate to their own variety and vehemence; to the comfort or affliction of it, by the communication of their own exceſſes in firſt or ſecond, or formall friendſhip or enmity in third and occult qualities; as the Oracle of *Cous* obſerved, *Aphor.* 28. Sect. 5. *Odoramentorum*

torum suffitus muliebria educit, & nil dia-
plerumque utilis esset, nisi capitis gravi-
tatem inferret. But even to the pain-
full vellication and rosion of the
nostrills, eyes, and the tender parts
of the face. And again, we observe
most perfumed bodies in tract of
time, to fall into minoration of gra-
vity and substantiall contabescence,
and the Odor to continue vigorous
in the Aer, a long time after the re-
move of the body, from which it
was effluxed. All which are mani-
festo's sufficient to ascertain us, that
from odorate bodies there doth
ascend a certain corporeall exhala-
tion, carrying with it the faculty of
Calefaction, Frigefaction, exiccati-
on, humectation, and other efficien-
cies, which no Philosophy can expect
from the naked immateriall species
or representative forms of odors. Ot-
therfore we willingly subscribe thus
much, that from most odorable
there doth an odorate vapour ex-
hale, and that this exhalation is
corporeall: but yet, that there is
presumed and required a spiritual

or

or intentional image of this odor, to the act of the sense or smel of it, is our assaveration, and we hope the sense of Truth.

But whether there be required a concurrence of both; or whether the species of an Odor, which is only and properly the object of smell, be always in conjunction with some corporeal subject or vapor, without whose association it cannot be related to the sensorium? is not in dispute; and indeed the Axis on which the weight of the whole controversy is moved. We are satisfyed that the coadjutancy of a vapor is not *semper, in omnibus & singulis*, necessary; that this effluvium or exhalation evaporated from the object, does not alway accompany the Odor to the Nostrils; yea that frequently the object emits no corporeall effluvium at all, and that the smelling is very often excited by spirituall qualities, or the species only of an odor, expired from the odorate body, and arriving at the Organ.

An species odoris semper vaporis vehiculo indigeat?

gan. For whoever grants this e
halation to be alway concomit
to the Odor, as the vehicle or t
ſporter of it; muſt infer an a
not a little derogatory to the g
attribute of God, his wiſdo
that is, mutilate the whole fi
daies work, rob all the Citizen
the Ocean of one ſenſe, which
the charter of their Creation, th
ſtand poſſeſſed of, and ſubvert t
experiment of Anglers, who p
fume their baits. For ſince the S
of an Odor conſiſts *in Sacro & cal*
elaborato, and all exhalations
natural propenſity aſcend to uni
with the congenerous element
Fire, how much a Bœotian is th
headpiece, that can conceive th
ſhift their eſſence, and deſcends
the earth in the bottom of the w
ter? or when there arrived, th
they can conſerve the integrity
their nature, ſince all odorate bod
no ſooner meet with humecta
on, but they bid adieu to their od
rable endowments. Moreove
whence came ſo large and diuu
nou

Bœti apud Antiquos ſtoliditatis et ſtupiditatis nomine malè audierunt, ut innuit. Horat. in Epiſt.

Bœotum in craſſo jurares aere natum.

ous an effluvium, which serves to qualifie a vast quantity of Aer, be maintained? Assuredly, if the odorate bodies which are frequently of very small bulk, were wholly at once resolved into vapors, they would not suffice to the expletion or tincture of halfe that spatious room, which the odors possesse. And 'tis no rarity to observe perfumes of minute bodies, a long time to maintain the prodigal expence of odors, without a marasmus of substance, or minoration of gravity.

Our hopes tell us we shall offend but venially, though we here make a short excursion on the negative of that question, *An odores nutriendi vim habeant*, whether odors are endowed with the power of nutrition? For since the aliment of a body ought to be corporeall; *Ex eisdem nutriamur, ex quibus conamur*; the materialls of our nutrition, must be congenerous to those of our generation; but odors are but simple qualities, and homoge- *A digression.*

neous to but one ingredient in [illegible] composition: we may safely con-clude, that odors can be no pabu-lum or aliment proper for the sus-tentation of compound and solid bodies; and willingly resign such aerial pasture to the astomy or people without mouths, mentioned by *Pliny*; and after him by our countryman, Sr. *John Mandevil* (who was very unfortunate in his travails never to visit *Anticyra*) or to the ofspring of the western wind, the Spanish Jennets: and must receive what is observed in the refocillation or refection of the sick either in suddain Lypothymies, or Hectick languors, from gratefull and fragrant Odors; and recorded in dying *Democritus*, that with the sum of hott bread only, he maintained a three daies siege against death to be meant not of the odors, but odorate vapors exhaling from the bread, and other odorables. Neither is that a true and reall nutri-tion, which is made by the appo-sition only of an analogous sub-

stance

stance; but in propriety of language, a recreation, or refocillation only of the Spirits.

Concerning the instrument of smelling, in a lientious acception, all men agree upon the Nose; but in a more satisfactory and severe, the best and most Physicians have determined, that the two mamillary probosses of the brain, are the principall sensorium. *Odoratus Organon.*

The Nose is by Anatomie distinguished into the (1.) External, and (2.) Internal. The External (to omit the parts of it) is in the intention of Nature, inservient to a manifold use: (1.) to the delation of the Aer both into the brain, for the generation of Animal, and lungs, for the material of the vitall spirits: (2.) to the delation of Odors up to the Papillary protuberances of the brain; hence those who have suffered amputation of their Noses, fall inevitably into an utter abolishment, or great depravment of their smell: (3.) to the evacuation of the pituitous excre- *1. Nasus externus.*

ments of the brain (4.) to assist the vocall organs in the formation and melodious articulation of the voice: (5.) to be the beauty and amiable decor of the face: and this certainly was considered by that white assembly of Saxon Virgins, (whose memory smells sweetly in our English Chronicle) who, to conserve their consecrated chastity inviolate and unsullied by the violent lust of the insulting Danes, gladly embraced the amputation of their noses: taking for granted that deformity was the best Antidote against a rape, and the greatest deformity the want of a nose.

Hinc Virgil. Deiphobi nasi dissectionem vocat vulnus inhonestum. Lib. 6 Æneid.

2. *Nasus internus:*

The internal nose consists of two parts only (1.) the *Os Ethmoides*, Cribriforme, or spongy bone: (2.) the Mammillary Prodesses of the brain.

1. *Os Ethmoides*

The spongy bone is the Velamen or ornament of the two mammillary productions, drilled full of slender holes or spongiosities, through which the inspired Aer is immediately conveyed to the brain, and in which the Aer qualified with

Odors, undergoes a prærequisite alteration and preparation, before it be presented to the prime Organ of smelling, which are two long, white, nervous, productions of the brain, situate within in cavity of the scul, invested, as al other Nerves are, with a crasse, and thin membrane, and derived to the basis of the nose.

2. Processus mamillares princeps odoratus organum.

This is a doctrine contemporanie to our reverend Tutor *Hippocrates* deliver'd *Lib.* περὶ σαρχῶν thus ὀσφραίνεται δ' ὁ ἐγκεφαλλὸς ὑγρὸς ἐὼν αὐτὸς τῶν ξηρῶν ἑλκόντων ξὺν τῷ ὁδμῇ ἠήρι δὶα τῶν βρογχίων ξηρῶν ἐόντων. The braine doth smell the oder of dry things, attracting the same together with the Aer, through cartilagineous or grisly pipes that are dry: supported by *Galen. lib. de Odorat. Organo.* 8. *de usu Part.* and 1. *de Sympt. Caus.* and is demonstrable by two irrefragable arguments used by *Laurentius* thus.

That part is to be accounted the principall and precipuous Αἰσθητήριον which hath a peculiar substance, figure, and composition, witnesse

Arg. 1.

the Aphorism of *Galen. 6. de Plac. Hippocr. & Platon.* but the mammillary protuberancies of the brain, amongst all parts of the nose, have obtained a peculiar nature, figure, and composition, to be found in no other part; but the bones, Cartilages, and membranes are in all parts alike: wherefore the principall cause of this action of smelling is to be ascribed to the Mammillary processes.

2. *Arg.*

There is no part in the nose alterable by odors, but these processes being full of spirits, do with facility receive the species of odors, and being consubstantiall to the Nerves, have a notion of that quality they receive.

Medium Odoratus.

The Medium conducible to Odoration is Aer and Water, yet neither according to essence, but qualification and impregnation. That the Aer infected with an odorate tincture is a medium, hath ever been a truth ratified beyond the dubitation of Pyrrhonian infidelity. That the water is endowed with

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the like capacity, and perodorable faculty, we may with *Aristotle Lib. de Hist Animal. 4, cap. 8.* argue from the vulgar experiment of betraying Fish with perfumed baites.

Chap. XII.

Of the Taſt.

THe irregular ſophiſtry of ſome, from a circumſtantial affinity concluding an eſſential identity, & from a too ſtrict expoſition of that looſer line of *Ariſtotle, Lib. de ſens. & ſenſili. cap. 2, Guſtus eſt quoddam genus Tactus*, hath not only ſtarted that Zetema or doubt *An Guſtus ſit idem ſenſus cum potentia, quæ qualitates tangibiles percipit?* But with pertinacity maintained the affirmative, and confounded this ſenſe with the Touch. But as the inference is unlawfull, ſo is the interpretation unjuſt, rendring in a rigid and abſolute ſenſe, what was intended in a

conditionall, and delivered in terms of ſome latitude. For though at firſt bluſh, the words ſeem to prove that the Touch is the genus and the Taſt but the ſpecies or ſubdiviſion of it; yet to him, that ſhall with ſeverer eyes pry into the deuteroſcopy and medullary intention of them, will it manifeſtly appear that *Ariſtotle* meant no more then to demonſtrate the Cognation and ſimilitude betwixt theſe two Senſes. For had the Contents of his thoughts been, that the Taſt and Touch were not in ſpecie different, in probability he would never have ſaid, *Guſtus eſt tactus quidam*, but have ſpared that conditionall particle, and in poſitive and down right termes have ſaid *Guſtus eſt tactus*.

Neither can it become our reaſon to wonder why *Ariſtotle* ſpeaks thus of this ſenſe onely, and not of any others ſince ſo large an Analogy and reſemblance can be made out, betwixt no two ſenſes, as betwixt this and the Touch; for in both there can bee no comprehenſion, with-

without the immediate application of the object on the *Senſorium*, and the contiguity of their extremities: and Guſtable Qualities, in regard of corporeity, materiality, and teriety, ſo fitly correſpond with Tangible, that wee may ſafely avouch that ſentence of *Ariſtotle*, *Guſtabile eſt quoddam tangibile.* Wherefore we muſt acknowledge the Taſt a peculiar Senſe, declaring its dependency on, and diſtinction from the Touch, both *Objecto* and *Organo*; For the object of one is τὸ ἁπτὸν Tangible, of the other τὸ χυμὸν Guſtable: and the Touch conſerving its integrity and vigor in the tongue, the Taſt may be aboliſhed or depraved: *& ubicunque eſt Tactus, ibi non etiam eſt Guſtus.*

It is generally defined to bee one of the five externall ſenſes, whereby wee diſcerne the difference of Sapours. 1. *Definitio.*

The proper and approximate inſtrument of Taſting is the Tongue; and in particular (not the inveſting Tunicle as *Galen*, and after him *Veſalius* 2. *Organon.*

Τὸ δ' αἰσθητικὸν χυμῶν γλῶττα, ineſt. pars ſentiens ſaporem lingua Ariſt. Lib. 1. de Hiſtor. Anim.

Leſius opinioned, nor the guſtatory nerve expanſed into the inveſtment, as ſome conceive by tradition from *Columbus*) the pulpe or cuticulous ſubſtance of it, which being of a peculiar and unparralelled conſtitution, ſoft, lax, rare and ſpongy, doth imbibe the ſapours, comprehended in their own liquid principles and conſervatories, and impregnated by the ſlaver or ſalival humidity of the mouth.

3. *Medium.* External medium there is none; for the guſtatory Faculty is not invited into the act of comprehenſion by the diſtantiall, but contiguous poſition, and immediate admotion of the ſapid object to the Organ; but the internal medium is the porous pellicle, or ſpongy integument of the Tongue, aſſiſted by the concurrence, and coefficiency of the ſpittle, or ſalival emudation of it: For this humidity is natures menſtruum, ordained for the maceration, extraction, and impræguation of ſapors, which having paſſed the corrective or auxiliant

liant operation, of this liquid mediator, are through the incontinuities, or interſtitiall diviſions of the obducted Membrane, ſoaked into the pulpous ſubſtance of the Tongue, and therein perfected into guſtation. *Vt enim Color objectum viſus eſt, & tamen ſine lumine videri non poteſt: ita ſapor objectum guſtus eſt, quietiam non guſtatur ſine humido, quod eſt velut actus medij*, was the expreſſion of *Ariſtotle*.

The object of the taſt is ὑγρὸν, a ſapour; this is a poſition, whoſe certitude is erected on no meaner foundations then the infallible, and ſcientifick doctrine of our ſenſe, (whoſe information in its own proper buſineſſe, is thought ſuperior to the incroachment of deluſion, and carries authority ſufficient to convert, or ſilence contradiction) and the aggregated affirmation of all Authors, whoſe judgments ſavour any thing of reaſon: But what the nature and original of a ſapour is, hath empuzled the enquiries, and retired from the know- 4. *Objectum.*

knowledge of thoſe antient worthies, *Empedocles*, *Democritus*, *Leucippus*, *Anaxagoras*, *Galen*, *Ariſtotle*, and all ſucceeding Philoſophers, who had not with more then one eye looked into the Arcana of Chymiſtry, and whoſe cæcutiency had miſſed the illumination of a Spagyrick Collyrium.

A digreſſion concerning Sapors and their cauſes.

For though *Galen* and the Peripateticks hunt a ſapour from Elements, and the determinate contemperation of their firſt qualities, thus. There is no elemental or homogeneous body qualified with a ſapour, which is properly an affection of compound materialls, requiring to its production the ſyndrome, and ſyncriticall union of three principles, *viz.* (1.) Terreſtrious ſiccity, (2.) Aqueous humidity, (3.) Heat, the *πρῶτον δεκτικὸν*, or active ingredient, which carries the maſculine efficiency in operations naturall; for water, in the ſimplicitie of its primitive conſtitution, being inſipid, if percolated through *ſiccum terreſtre*, acquireth a ſapidity pro-

proportionate to the intense or remiss adustion of the materiall dissolved into concorporation, as we cannot but observe in fountains, which contract to their streams the various sapors of those sundry veins of earth, through whose straits they have steered in their subterraneous voyages; and in a lixivium or lie, which admits the amaritude, or salsedo, discernable in the tast of it, from its transcolation through ashes; yet the essence of a sapour consists more in *Humido*, then *Sicco*, and is a qualitie affecting the Tast, owing its production to the permistion of an aqueous Humidum, with a terrestrious siccum, in compound bodies. But since the contemperature is various, and the Aqueous Humidum united with the earthy Siccium (which is the subject of sapors) hath its consistence participating sometimes of crassitude or thicknesse, and sometimes of tenuity or thinnesse; and the Heat (which is the active efficient) varies its activity, according to the gradu-

Saporis definitio.

graduality of intention or remiſſion; hence do thoſe various and different kinds of ſapors derive their Original.

And though Phyſicians on the tradition of theſe principles found the invention of remedies, and reſt rules for the inveſtigation of the manifeſt faculties of Medicaments by the digeſtion of their ſapors; and to this end conſtitute nine differences or ground diſtinctions of ſapors, as they are enumerated by that mouth of the Arabian Oracles, *Fernelius*, thus.

Fernel Method. Met. lib. 4. cap. 3.

1. *Acer.* A ſharp or keen ſapor is, that which affects the mouth and tongue with an acrimony, compunction, and vellication; which is conſpicuous in Pepper, Pellitory, Euphorbium, &c. It is ſeaſoned from a thin, dry, and hot matter, nor can it ſubſiſt in a ſubject of any other conſtitution.

2. *Acidus.* Acide, or ſharp, is that which pricks and bites the tongue, but without any ſence of heat; ſuch is deprehended in Vinegar, juice of Limons,

Limons, Citrons, ſome Malacotones and Quinces: this flowes from a thin, dry matter, or that whoſe innate heat is expired by putrefaction, or whoſe Original frigidity is concomitant to tenuity.

3. *Pinguis.* Fat, or luſcious, ſollicites the guſto neither with heat nor acrimony, but ſmears or daubs the mouth with an unctuous tenor or viſcidity; ſuch is chiefly diſcerned in Oyles, either ſimple, or amygdaline, in butter, & fat, which hath no rancidity, either acquired by antiquity, or originary and naturall; ſuch as the fat of Lions and Wolves; in mucilaginous plants as Althæa, &c. This hath its production from a thin, aerial matter, temperate in heat and cold.

4. *Salſus.* A ſalt vapor doth not very much calefy, but by a ſharp ſiccity bite the tongue: this is manifeſt chiefly in ſalt and Nitre, but more obſcurely in the herb Crithmum, or Sampier: it ſubſiſts in a matter whoſe ingredients heat and ſiccity are equall. For in water (which is not

exqui-

exquiſitely ſimple) the external heat in duration of time, torrefying and exiccating thoſe particles or atomicall portions of Earth, which are incorporated with it, inducеth a ſaltneſſe and brackiſhneſſe, perceptible by the taſt. There is another ſalt ſapor produced by Chymiſtry, out of the moſt drie and earthy matter, which the extream and moſt intenſe activity of fire hath torrefied to Cineſaction. And there is no compound body in *rerum natura*, from which a Chymiſt may not extract the Calx and proper ſalt, diſcernable by the taſt, as from Soot, Tartar, Nitre, &c.

5. *Auſterus.* The Auſtere doth both moderately bind, and with a certain aſperity or roughneſſe coarctate the parts of the tongue; and hence, in ſome meaſure dry and refrigerate: this is properly called *Crudus ſapor*, and is peculiar to all fruits during their immaturity, as all obſerve in the juice of unripe Grapes, Apples, Pears, Medlars, and alſo Purſillane: it conſiſts in a matter moderately par-

participating earth and water, ſubject to the dominion and exuperancy of cold.

The ſweet ſapor, with ſuavity and jucundity delights the ſenſe, and is not offenſive by the unevenneſſe or ſurpluſage of any qualitie: ſuch is conſpicuous in Sugar, Hony, Liquoriſh, Polypody, Jujubes, and moſt fruits after maturity, and in moſt Lenitive Medicines. 6. *Dulcis.*

The Bitter is antagoniſt to the ſweet Sapor, is unpleaſant and offenſive, and doth, as it were, corrade and divell the ſenſe. This notably diſcovers it ſelf in Alöes, wormwood, the leſſer Centaury and Colocynthis, by whoſe example the others are eaſily diſcovered. The matter of it is craſs and terrene, torrified and exiccated by exceſſive Calidity: and hence *omne amarum eſt calidum & ſiccum.* 7. *Amarus.*

The ſowre borders upon the auſtere or pontick ſapor, but is far more ungratefull to the ſenſe, doth conſtringe & exaſperate all parts of the mouth, and for this reaſon more 8. *Acerbus.*

dry and cool: prodigally perceptible it is in Pomegranate rinds, Galls, Sumach, Cypreſſe nuts, Achornes, &c. it dwells in a compoſition totally terrene and dry, whoſe languid heat is ſubdued to inactivity by the conqueſt of its cold adverſary, confederate with ſiccity.

9. *Inſipidus.* The inſipid, ſatuous, Ἄσαπον, is not in the rigor of language, a Sapor, but the privation of it, and doth ſtrike the ſenſe with no manifeſt quality. To this are referred, all the ſpecies of bread-Corn, Gourds, Citrull, Cucumbers, &c. Though theſe are materially craſs, yet not abſolutely earthly, dry, and aſtringent, but daſhed with a portion of humidity, which notwithſtanding is not exquiſitely permixed with ſiccity, by the power of heat. And ſince neither the cold is potential in any conſiderable exceſſe, it of neceſſity comes to paſſe, that neither the Sapor can be judged of by the Gulto, nor any quality or medicall faculty inveſtigated by the inſenſibility of the effects.

We

We say, though the endeavours of most have steered this course, and thus attempted the deduction of sapors from primitive qualities: yet have they rowled the stone in vain: and had not the light of the Chymists Fire relieved our benighted enquiries, they had yet been groping in the obscurity of error. For wee see good reason to be of *Scaligers* opinion, that wee may as safely deduce life, laughter, sense, intellection, increment and voluntary motion (actions flowing from Forms more noble and divine) from Elements, as Sapors from their first qualities. Wherefore we conclude it more honorable and satisfactory to adhære to the laudable doctrine of Chymists, who refer Sapor unto Salt; *Sal enim est primum sapidum & gustabile, & omnia quæ saporem habent, eum propter Salem habent. Ubicunq; enim sapor deprehenditur, ibi sal est: & ubicunque sal, ibi sapor.* Sennert. de Consensu Chymicorum cum Galenicis cap. 11. wee direct the unsatisfied to that

Scaliger. Lib. de plantis, primæ qualitates penè ab omnibus existimatæ sunt saporum causæ: tametsi nobis aliter videtur: Nam si sapor à calore fit, ergò calidum elementum primò & per se sapidum existet; Quid quòd multa calida mista insipida. Quod si quis dicat ex 4 qualitatum temperatione confici saporem; respondeat, an in elemento quopiam, qua elementum est, sapor insit? Non sane est. Cæterum, quemadmodum neq; vita prædita ab elementis neque risus, neq; somnus, neque intellectio, neque crementum, neq; motus voluntarius, sed à formis aliis, quam elementaribus; ita sapor quoq;

judicious treatise of *L. Grillus de de sapore amaro & dulci.*

CHAP. XII.

Of the Touch.

THis is that fertile sense, to whose delicate invitement we owe our Generation; for had not the wisdom of providence in her design of immortality, endued the Organs official to the recruit and rejuvenescence of mankind, with a most exquisite sense of *Touching*, and annexed a pleasant titillation, or lustful fury, which transports man beyond the severity of his reason, and bewitcheth him to the actions of carnalitie; the Deluge had been spared, for the first age had seen the world depopulated, and been the last age; and humanity had been lost in the Grave, aswell as innocence in the fall of our first Parents. *Quis enim, per Deum immortalem, concubitum rem adeò fœdam solicitaret, amplexaretur; ei indulgeret?*

[a] *Mare Anton. de seipso. Lib. 6. Num.* 10. *tum Cœtus, intestini parvi affrictio, mucique excretio, non sine Convulsione. Ita vertit Meric. Casauben.*

Qui

Quo vultu divinum illud Animal plenum rationis et consilii, quem vocamus hominem, obscænas mulierum partes, tot sordibus inquinatas attrectaret, nisi incredibili voluptatis œstro percita essent Genitalia? and let us but abate the temptation of this sense, and the libidinous charmes of it, preambulous to the act of congression, we shall soon discover that so magnifyed a delight of sensuality to be no other, then what that noble Stoick *Marcus Antonius* defined it Ἐντερίου παρατριφὴς, καὶ μετὰ τινος σπασποῦ μοξαρίου ἐκκρίσις. But the attrition of an ordinary base intrall, and the excretion of a little snivell, with a certain kind of convulsion, as *Hippocrates* describes it.

This is that friend that conserves us in our first life, which we spend in the dark prison of the womb; ushers us into this, which our improvidence trifles away on the superinductions of sin, and never forsakes us untill our translation into the future. For when all our other unconstant senses perish, or are up-

on small perturbations of the mind suspended, and leave us unguarded, and prostituted unto the cold embraces of death, this faithfull and unseparable *Achates* doth attend us unto that moment, which shall determine our mortality. Hence *Aristotle* drew that prognostick, that if any creature be deprived of this sense of *Touching*, death will of necessity ensue: For neither is it possible (saith he) that any creature should want this sense neither to the being of a creature is it of necessity that he have any sense besides this.

Arist. de An. L. 3. cap. 13. Text. 67.

In brief, this is that perswasive sense, on whose testimony, the warie Apostle chose to part with his infidelity, and to conclude the presence of his revived Lord: that painful tender sense, on the patience and victory of whose torments, the glorious Souls of Martyrs have ascended to the consummation of their faith. That virtuall and medicinal sense, by which the great Physician of the world was pleased

to

to restore sight to the blind, strength and activity to the lame, hearing to the deaf, to extinguish the feaver of *Peters* Mother-law, stop the inveterate issue of his Hæmorrhoidal Patient, unlock the gates of death, and reduce the Widowes Son from the total privation, back to the perfect habit of life.

Concerning this sense, there are no mean controversies among Philosophers', and the first enquirie is, *An tactus sit unus numero sensus?* Whether there be only one single power of touching (as there is one faculty of seeing, a second of hearing, a third of smelling, a fourth of tasting) or many distinct powers? *Aristotle* moves this query. *Lib. de Anima, cap.* 2. and subjoynes this reason of his dubitation, *Unus sensus est unius primæ contrarietatis, &c.* One single sense hath but one proper object, to which all, that it perceives, may be referred: But the touch seemes not to have one common object, but many; for it judgeth hot and cold, dry and moist, heavy

An tactus unus numero sensus sit.

heavy and light, hard and ſoft, rough and ſmooth, thick and thin, &c. which are not reducible to any one common Genus; and the ſame reaſon, according to which they are qualified for the perception of the touch. And by the treachery of this *ignis fatuus*, the facilitie of ſome, who were far on their journey toward *Athens*, hath been ſeduced ſo wide off the tract of truth, as to fall upon the abſurd belief, *Plures eſſe Tactus*, that there is a plurality of touching Facultics; and of theſe ſome make two, one for the diſcernment of calidity and frigidity, another for the dignotion of humidity and ſiccity; others ſuperadd a third, for the perception of gravity and levity: a third ſect determines, that there are as many diſtinct powers of touching as there are διαφοραὶ καὶ ἐναντιώσεις κατὰ τὴν ἁφὴν differences and contrarieties of tangibles: a fourth hath yet multiplied their number, and ſuperadded others, to the ſenſation of pain and pleaſure, delectation, venery, hunger and thirſt.

On

On the contrary, many conclude on the ſingularity of the touch, which although it comprehend objects in number, numerous, and in nature, various and repugnant; yet doth apprehend them all under one common reaſon, and determinate qualification: after the ſame manner that the ſight diſcerns white, black, red, yellow, green, and all *ſub communi colori, coloris ratione.*

Although we confeſſe our judgment below the deciſion of this high diſpute, and that many great Clerks have determined of nothing, but the impoſſibility of its determination; yet probability invites us to this latter opinion: *unam eſſe tangendi potentiam.* For although there be a certain, ἀλλοίωσις or materiall immutation in the Organ, preambulous to Taction; and this alteration is various and different, according to the variety and difference of tangibles; yet from this the unity of the Touch is not æſtimated, but only from the ſpiritu-

all,

all alteration, since it is proper to every sense to receive, not the substantiall, but intentionall formes of its proper object. And this spirituall alteration, which is the same in all the contrarieties of the tangible objects, constitutes one individuall sense, otherwaies we may find as many sensitive in any of the other senses. Neither shall we need to grant a plurality of Touches for pain and pleasure, since pain and pleasure are not perceived and distinguished by the Touch, but the objects of those passions.

Organum tactus

The other greyheaded contention (devolved from great antiquity to the present, and not unlikely to descend to the bottom of future times) is concerning the instrument of this sense; some concluding for the Flesh, others the Skin, and most the Nerves: How lame and inconsistent with the integrity of truth each of these opinions is, our succeeding lines will attempt to declare.

Adequatum est Membrane.

Since every sense hath its peculiar

sias Organ, without which the faculcie must remain useleſſe and unactive; and this Organ is, by the provident law of constitution and prædispoſition, subject to the admission of that Ens or affection, which the object shall impoſe or impreſſe on it; and that part is to be accounted the Organ, which is manifestly affected, and altered by the object: we suppoſe the induction good, if applyed to the touch, that in all members which discern tactile qualities, there is the instrument of touching; and that part which in every place of the body, is affected and changed by tactile qualities, is the Organ of touching. And since the touch resides in no part which is not furnished with a membrane, and *è contra*, whereſoever any membrane is, there is the ſenſe of touching also; we conclude, that the Heart Membranes are the true, prime, and adæquate Organs of the Touch, and that all parts receive their ſenſibilitie from them.

Some have endeavoured the subver-

version of this opinion, but with vain and inconsiderable objections, for what they urge; that the Flesh is endowed with the sense of feeling, is manifestly false. For the Flesh feels not *per se*, or by any sensible power inhærent to it selfe, but as it is furnished with Nervous, or Membranous Fibres, which are bestowed on the substance of the Muscles: But the Flesh of the viscera, and glandules, whose substance is unprovided of Fibres, is wholly devoid of sensibility.

Non Caro.

And although *Galen* teach us, *Lib. de placit. 7. Cap. 6.* Ἅπαντι μορίῳ νεῦρον λαμβάνοντι δυνατὸν ἀισθάνεσθαι that every part furnished with a Nerve, enjoys the sense of feeling; yet are we to allow his Axiom tru ōly in a qualified sense, that is *quatenus ipsi nervi membranosi sunt*; as the nerves themselves are membranous, and disseminate their fibrous surcles and capillary productions on the parts. Otherwise if we consider the Nerves in *sensu diviso*, in the naked simplicities of their own natures, as they are strictly

Nec Necuus.

ſtrictly and properly Nerves, they are not the proper inſtrument of touching, but Canales or conduits inſervient to the diſtribution and tranſvection of the Animall ſpirits into all parts of the body, in which reſpect they are officiall to the touch no more, then to the reſt of the ſenſes. But that qualification and endowment of ſenſibility they poſſeſſe, they borrow from the membranes, wherewith they are inveſted; as ordinary obſervation of wounds of the Nerves, eſpecially the greater ones, wil inform us; for the medullary ſubſtance may be handled and drawn forth of the wound, without any pain at all; but if the coat or membrane be but touched, moſt exquiſite and invincible torments immediately enſue.

Concerning the skin, we grant it to be the common integument of the body, whoſe principal and publick action is *eſse tactus inſtrumentum & ad ſubjectarum partium tutelam*, to be the inſtrument of Touching, and diſcern external inju-

Cutis eſt inſtrumentum tactus, præcipuum, ſed non adæquatum.

injurious instruments that invade the body; and we believe that Galen said very truely, *Cutem maxime quæ est in manu, omnium sensibilium normam esse, & tactus instrumentam, prudentissimè Animali proprium, qua, ut communi instrumento, ad res tangendas & apprehendendas, omnium qualitatum tangibilium differentia melius quam ullo alio corporis parte, dignoscuntur*: Yet we cannot concede it to be *unicum & adæquatum tactus Organum*, the only and adæquate instrument of touching; but since other parts could not want this sense for the avoidance of destructive and noxious objects, nature hath been far more bountifull, and diffused it into the most retired parts; and for this reason the Membranes are dispersed through all the body, and by their mediation the sense of touching, which in many of the internal parts is most exquisite and acute.

The collection of all is, that the præcipuous Organ of the touch, is

the skin, chiefly that part wherewith the hands are lined, as destined to the common apprehension of all things tangible: but the adæquate, are the membranes; by the benefit whereof, all other parts (the skin excepted) obtain the sense of Feeling.

FINIS.